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ALL WHO ARE ENGAGED IN
FOR THE SICK

BY

E A. AIKENS

a Hospital, Pittsburg, and of the Iowa
; late Director of Sibley Memorial
uthor of " Hospital Housekeep-
hool Methods and the Head
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CLINICAL STUDIES

FOR

NURSES

A TEXT-BOOK FOR SECOND AND THIRD YEAR PUPIL NURSES
AND A HAND-BOOK FOR ALL WHO ARE ENGAGED IN
CARING FOR THE SICK

BY

CHARLOTTE A. AIKENS

Formerly Superintendent of Columbia Hospital, Pittsburg, and of the Iowa Methodist Hospital, Des Moines; late Director of Sibley Memorial Hospital, Washington, D. C.; Author of "Hospital Housekeeping," "Hospital Training-school Methods and the Head Nurse," "Primary Studies for Nurses," "Hospital Management," "Home Nurse's Handbook," and "Studies in Ethics for Nurses."

THIRD EDITION
ILLUSTRATED

PHILADELPHIA AND LONDON
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PREFACE TO THE THIRD EDITION

In this edition the entire book has been thoroughly revised and brought into conformity with approved methods in present nursing practice. Much new matter has been added which necessitated resetting the book. A rearrangement has been made in Section I by which a new chapter on constitutional diseases has been introduced. Additions have been made to the chapters on acute communicable diseases. Of additions to other chapters, the most important are the management of hemorrhage in tuberculosis, metabolism, nursing of the aged, and in heart and circulatory disorders, the care of premature babies, the care of the teeth, and deformities and diseases of children. Special emphasis has been placed on preventive methods and the nurse's opportunity in the promotion of health. A number of new illustrations have been introduced.

Special thanks are due Miss Helen Freer of Oak Forest, Illinois, for the illustrations showing hemorrhage baskets which appear in the chapter on tuberculosis. Many friends in the hospital and nursing world have aided by helpful suggestions. To all of these thanks are here accorded.

Charlotte A. Aikens.

41837

PREFACE

The purpose of this volume does not differ greatly from that of *Primary Studies for Nurses,* the first volume of the series of which this is the second. It is designed to assist in securing graded instruction for nurses; to simplify and systematize the problem of teaching; to promote uniformity; to save time for teachers and pupils, and also to serve in some measure as a handbook for the nurse who is already trained and at work away from a school or hospital. It gathers together in one volume matter which has previously been scattered in several books and often very unsystematically taught by lectures on which nurses were obliged to take notes, in uncertain fashion, and laboriously transcribe them. The aim has been to include the main points about the common diseases and their management, which nurses should know in order to intelligently assist the physician and care for the sick under his direction.

The vexed question as to how much a nurse should be taught is still unsettled, and it is, therefore, a difficult matter to decide what should be inserted and omitted in such a volume. It is difficult to get two people to agree on the question when it comes to details. One friend has already made the criticism that it contained so much that there would be little scope left for the teacher to elaborate in class, and another has criticized it for not containing more matter on the subject in which she is especially interested. No one book is big enough to include every point on every subject which every teacher thinks should be included, or is important for a nurse to know. Each teacher will want to elaborate on certain points in class, and blank pages have been inserted for notes on additional important practical points which it may be desirable for nurses to record.

The chapters of the book represent the author's idea of the minimum, not the maximum, number of class periods which should be allotted to each subject.

The author desires to emphasize the fact that the book is a compilation. It is not claimed that anything strikingly new is stated, nor that any original discoveries have been made regarding the diseases and methods with which the book deals. The credit and responsibility for the treatments recommended and mentioned must rest with the medical writers and teachers consulted. Not the least of the difficulties connected with the work has been the deciding between conflicting medical authorities. On many points medical writers of apparently equal thoroughness and reliability have arrived at widely different conclusions. For instance, one writer states positively that the incubation period of a certain disease is four days; another states just as positively that it is from fourteen to eighteen days. One says that a certain ligature material should never be boiled more than two minutes or it will be rendered brittle and worthless. Another says it should be boiled not less than thirty minutes. Thus illustrations might be multiplied from every chapter of difficulties which have appeared along the way. The wisest decision may not always have been made as to which authority should be accepted, and allowance must always be made for different experiences which have led to different opinions and conclusions. Standard medical works and skilled practising physicians who are teachers of medical students and nurses have been freely consulted; much has been borrowed in direct quotation from articles in current medical literature; careful medical critics have exercised censorship; no pains have been spared to make the handbook authoritative and to bring to notice modern methods of treatment which have proved valuable.

The author is under obligation to many friends for valuable help. Without the encouragement and help of these friends the book would never have been written. Among these mention should be made of Dr. H. S. Crossen.

of St. Louis, for assistance in the chapters on obstetrics and gynecology; to Dr. C. W. Hitchcock, of Detroit, and Dr. R. M. Phelps, of Rochester, Minn., for much assistance in the section devoted to nervous and mental diseases; to Dr. W. C. Chittick, of Detroit, for valuable aid, especially with the section devoted to medical nursing; to Miss Minnie Goodnow, Superintendent of Bronson Hospital, Kalamazoo, Mich.; Miss Emma A. Anderson, Superintendent of New England Baptist Hospital, Boston; Miss Mary L. Keith, Superintendent of City Hospital, Rochester, N. Y., and to Dr. Helen MacMurchy, Editor of the *Canadian Nurse,* Toronto, for helpful criticisms and other assistance; to Mr. Max J. Walter, Superintendent of Pennsylvania Orthopedic Institute and School of Mechanotherapy, Philadelphia, for great practical assistance with the chapters relating to physical therapeutics and massage. The illustrations contained in the chapter on massage were taken especially for this book at the institute of which he has charge.

The superintendents of various hospitals have kindly furnished information regarding methods, and contributed specimen dietaries. Dr. J. H. Kellogg has given cordial permission to use some of the cuts illustrating hydrotherapeutic treatments and methods used in Battle Creek Sanitarium, and which are described in detail in his great work on *Rational Hydrotherapy,* from which quotations have been freely made.

In arranging the volume the author has frequently consulted the following medical works: *Principles and Practice of Medicine,* Osler; *Clinical Therapeutics,* Croftan; *Practical Fever Nursing,* Register; *Medical Gynecology,* Howard Kelly; *Obstetrics for Nurses,* DeLee; *The Surgical Assistant,* Brickner; *Practical Dietetics,* Thompson. For definitions dependence has largely been placed on *American Illustrated Medical Dictionary,* Dorland. As previously stated, the volume has been written to meet the need of a book which will give in systematic, concise, and connected form the theory that a nurse needs in the second and third

CHARLOTTE A. AIK

ROIT.

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CLINICAL STUDIES FOR NURSES

INTRODUCTION

SUGGESTIONS TO TEACHERS

THIS volume of studies has been arranged to follow the lessons on anatomy, physiology, hygiene, bacteriology, materia medica, and dietetics contained in Primary Studies for Nurses. It is taken for granted, also, that before beginning this book the theory and technic of general nursing have been taught in class, at the bedside, and through clinics and demonstrations. The lessons on diseases, general and special, with which this volume mainly deals, should not be attempted till a good foundation has been laid in preparatory studies during the first year.

The general plan of the book is much the same as that of the first volume. It is arranged in conformity with the recommendations regarding training-school studies made by the American Hospital Association. For convenience in teaching, reviews, and examinations, a separation of the contents has been made into several sections, it being the author's opinion that better work will be done, with less strain on teacher and pupil, if reviews are held frequently, so as to clinch important principles in the memory, and if examinations are arranged for every two or three months rather than a number of examinations at the close of the year.

The author firmly believes that more time should be spent in theoretic teaching of subjects or lines of nursing in which there are limited opportunities for gaining experience while in training, and that this consideration should guide to some extent in deciding as to the amount of time which should be devoted to any subject. The need of giving special attention to the nursing of nervous and mental patients in which comparatively few nurses gain sufficient, if any practical experience before graduation, is obvious. There is a steady decrease in bacterial diseases (even if slow), and a steady increase in nervous and mental patients, and of patients in which the nervous element complicates the ailment for which the patient sought relief. While no amount of study of books or practical lectures can give what practical experience teaches in the care of nervous patients, the nurse should be given all the helps possible in dealing with this class of cases in which the personality of the nurse plays such an important part.

The author would emphasize also the desirability of giving *all* nurses some instruction in massage. A few lessons will not fit a nurse to become an expert massage operator or teacher. It will decidedly help her in caring for a great variety of patients. Visiting instructors in massage can be secured to give a short course of practical demonstrations in any hospital once the authorities make up their mind to take this advance step.

The question as to whether or not every nurse should be obliged to have some training in obstetrics has been discussed, but experience in maternity nursing is now generally considered essential. Hospital experience is very desirable. When conditions make it impossible to arrange for such experience, then experience in homes through district nursing, or otherwise should be arranged for. Even though some nurses may decline to accept such patients after graduation, every nurse should know how to deal intelligently with obstetric emergencies. No general training is complete which does not provide for both theoretic and practical experience in this very important branch.

The teaching of the observation of symptoms at the bedside, in addition to class instruction in this branch, is another point which deserves special mention. It should be undertaken systematically and carried through, for the most part, by one physician appointed for that purpose. Every head nurse should also be on the alert to utilize opportunities for informal instruction along this line. The more the faculty of observation can be cultivated, the more valuable the nurse becomes to the patient, the physician, the hospital, and the community.

The list of clinics and demonstrations here outlined are suggestive of the possibilities along that line. This list has been submitted to a dozen or more superintendents of leading hospitals and training schools, and has the stamp of their approval. Perhaps few schools can or will follow this plan closely, but it is hoped that every training-school superintendent will endeavor to give the nurses the benefit of clinical instruction in as wide a variety of cases as the institution affords.

Where a third year of training is given, the author would suggest as a further means of developing the power of observation the introduction of round-table conferences for third-year pupils—such conferences to be conducted fort-nightly or monthly by one of the staff physicians. It is simply a form of clinical question-box, in which each nurse is required to bring to the class definite written questions regarding her patients—points regarding which she desires more light. It is believed that this method of teaching will stimulate nurses to help themselves to a great deal of knowledge which is lying all around them waiting to be picked up. In the early part of their training it is necessary to select the knowledge which they need, present it to them, and require them to take as much of it as they can. In the third year of their training this method might profitably be varied by stimulating them to independently select and pick up some additional matter. The round-table conference is suggested as a means to that end.

Some system of required reading for third-year pupils is also an excellent method. At the beginning of each month it will usually be known what lines of study are to be undertaken, and certain chapters in books which are in the library or, it may be, articles from nursing journals bearing on the subjects being taken up, can be prescribed—each pupil being given a slip with the exact pages to be read so that there may be no misunderstanding about it. This plan is used in academies and seminaries, and should be as successful in schools of nursing.

In the lessons outlined in this volume special attention has been given to the hygienic and dietetic management of the various diseases mentioned. The medicinal side of treatment is likely to vary with different patients and different physicians. The hygienic management of such diseases—the proper use of air, light, water, heat, food, etc.—and the prophylactic measures are much more important for nurses to become familiar with.

A small reference library for the use of nurses is a possibility in every training-school. Training-school principals might wisely give more attention to this point and ask for additions to the supply of reference books from time to time. At the end of this chapter will be found some suggestions regarding useful books of reference. Such a list might have been continued indefinitely, but in arranging this list the aim was to provide some book of reference on practically all of the subjects taught in schools of nursing.

CLINICS AND DEMONSTRATIONS[1]—SECOND AND THIRD YEARS.

1. Surgical technic. Preparations for operations. Nurses' duties during operations.
2. Preparation of antiseptic gauzes, ligatures, etc. Preparation for hypodermoclysis; for aspirating. Preparation of anesthetist's outfit.
3. Management of sutures and ligatures during operation. Instruments for common operations.
4. Surgical anatomy and surgical positions.
5. Surgical specimens—appendix, tumors, cysts, bone, etc.—preparation and general care.
6. Methods of preparing patients for examinations, inspection, percussion, auscultation, etc.—abdominal, vaginal; instrumental and non-instrumental.
7. Methods of arresting hemorrhage—external, internal.
8. Clinic on pulse and affections of heart and circulatory system.
9. Clinic on respiratory affections—pneumonia, pleurisy, asthma, tuberculosis, etc.
10. Fevers. Important symptoms in special cases.
11. Sepsis. Charts shown. Important symptoms and nursing points.

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[1] Recommended by American Hospital Association.

12. Children's diseases: rickets; teeth, general characteristics; skin affections of children; diseases of the eyes, ears, glandular system; comparison of symptoms in children with adults; marasmus; digestive disorders; adenoids, etc.

13. Orthopedic clinic. Bow-legs; Pott's disease; imperfect development; hip-joint disease; spinal curvatures; physical exercises. Adjustment of braces, extension apparatus, and corrective appliances.

14. Milk modification for infants according to different formulæ; also for fever patients and invalids.

15. Obstetric methods. Preparation for normal labor; for instrumental delivery; dressing the cord; care of the baby's mouth and eyes; massage of the mother's breasts; use and care of breast-pump; application of abdominal and breast binders; bathing and dressing the baby; management of obstetric emergencies, etc.

16. Demonstration of ophthalmic methods: washing out the conjunctival sac; applying drops to the eye; eye compresses; preparation for ophthalmic operations, dressings, etc.

17. Nursing methods in aural, mouth, and throat cases; preparation of field of operation in such cases; methods of feeding; uses of syringes, sprays, etc., nasal douches; taking a culture from the throat. Instruments for tracheotomy; intubation; care of tube, etc.

18. The uses of water for remedial purposes. External applications; spinal sprays and douches. Schott baths; Scotch douche with ordinary appliances; medicated baths etc.

19. Internal applications of water: lavage; enteroclysis; preparation for intravenous infusions, etc.

20. Massage. Demonstration of methods: effleurage, friction, pétrissage, tapotement; methods of stroking, management of light and heavy treatments.

21. Massage: kneading, percussion, general massage; contraindications.

22. Local massage—legs and abdomen.

23. Local massage—arms, head, and neck.

24. Physical exercises: passive and active movements.

25. Urine and urinalysis: simple tests for albumin, sugar, acidity, specific gravity, etc.

26. First-aid methods. Bandaging, etc., in case of accident. Artificial respiration, etc.

27. Management of delirious and insane patients.

NOTE.—The numbers signify only headings or divisions, not the number of demonstrations or clinics. It is hoped that each school will utilize for teaching purposes such cases as will provide means of teaching practical lessons, endeavoring to provide as much variety in clinics and demonstrations as facilities afford.

SUGGESTIONS FOR A REFERENCE LIBRARY FOR TRAINING-SCHOOLS

"Notes on Nursing." Florence Nightingale.
"Life of Florence Nightingale." Cook.
"Manual of Anatomy." Haynes.
"The Structure and Functions of the Body." Fiske.
"Personal Hygiene." Pyle.
"General Bacteriology." Jordan.
"Essentials of Bacteriology." Ball.
"Principles and Practice of Medicine." Osler.
"Materia Medica, Pharmacy, and Therapeutics." Potter.
"Materia Medica for Nurses." Stoney, Groff, or Dock.
"Practical Dietetics." W. Gilman Thompson.
"Dietetics for Nurses." Friedenwald and Ruhräh.
"Nurses' Handbook of Medicine." Henry.
"Chemistry and Urine Examination." Wolf.
"Practical Fever Nursing." Register.
"Diseases of Children for Nurses." McCombs.
"Diseases of Infants and Children." Ruhräh.
"Medical Gynecology." Howard A. Kelly.
"Essentials of Medicine." Emerson.
"Obstetric and Gynecologic Nursing." Davis.
"Gynecology for Nurses." Macfarlane.
"Obstetrics for Nurses." DeLee.
"A Nurse's Handbook of Obstetrics." Cooke.
"Care of the Baby." Griffith.
"The Surgical Assistant." Brickner.
"Operating Room and Patient." Fowler.

"Occupation Therapy." Dunton.

"The Work of Our Hands." Hall and Buck.

"Studies in Invalid Occupation." Tracy.

"Bandaging." Whiting.

"Immediate Care of the Injured." Morrow.

"Principles and Practice of Bandaging." Davis.

"Essentials of Diseases of the Eye." Jackson.

"Ear, Nose, and Throat." Kyle.

"Diseases of the Skin." Schamberg.

"Text-book of Mechanotherapy." Grafstrom.

"Nursing of the Insane." Barrus.

"Nursing of the Nervous and Insane." Mills.

"Essentials of Nervous Diseases and Insanity." Shaw.

"Rational Hydrotherapy." Kellogg.

"A Mind that Found Itself." Beers.

"Outlines of Nursing History." Goodnow.

"Studies in Ethics for Nurses." Aikens.

"History of Nursing." Dock and Nutting.

"American Illustrated Medical Dictionary." Dorland.

"Nursing Ethics." Robb.

"Disinfection and Disinfectants." Rosenau.

"Hospital Training-school Methods and the Head Nurse." Aikens.

"Friendly Visiting Among the Poor." Richmond.

"Practice of Charity." Devine.

"Defectives, Dependents, and Delinquents." Henderson.

"Elements of Theory and Practice of Cookery." Williams and Fisher.

"Hospital Management." Aikens.

SECTION I

STUDIES IN DISEASES AND MEDICAL NURSING

CHAPTER I

DISEASE AND ITS MANIFESTATIONS

Disease has been defined as an alteration in the state of the body, or of some of its organs, interrupting or disturbing the performance of the vital functions, and causing or threatening pain and weakness.

Disorder is a term used in speaking of an irregularity of some of the functions which is of minor importance, and temporary, or of comparatively short duration.

An *acute disease* is one which has a relatively short and severe course.

A *chronic disease* is slow in development and in subsidence.

A *self-limited disease* is one which runs a regular course, requiring a definite time, after which spontaneous recovery may be expected. Typhoid fever, measles, and pneumonia are illustrations of this class of diseases.

A *constitutional disease* is one which is general and affects to greater or less degree the whole system. Examples of this class are rickets, gout, and obesity.

Diathesis is a term used to designate a natural or congenital predisposition to a disease, such as hemorrhagic or rheumatic diathesis.

Functional diseases are those in which the proper action of a part or organ is impaired without any change in the structure of the tissue. These diseases are very numerous and are frequently cured by mental influence.

Organic diseases are those which are accompanied by structural changes visible to the unaided eye. (Dorland.)

Occupational diseases are those peculiar to certain occupations or due to one's employment.

An *infectious disease* is one due to a specific and pathogenic microörganism which grows and multiplies in the body.

A *contagious disease* is one which can be acquired by contact or inoculation, but the term is inaccurate, as many diseases that can be communicated in that way can also be carried by air or water.

The term *communicable disease* is preferable to either infectious or contagious.

An *epidemic disease* is one in which large numbers of persons in a locality are attacked.

Senile diseases are due to old age.

Etiology is the cause or causes which have resulted in the disease. The causes may be immediate, occurring just previous to the attack, or predisposing, due to some inherited or acquired tendency.

Predisposing causes of disease may be temperament, sex, age, climate, occupation, habits, idiosyncrasy, or heredity. Any of these may produce a condition of the system which renders it susceptible to morbid influences. While but a few diseases are capable of being transmitted from parent to offspring, yet the tendency to a certain disease may be inherited because of deficient vitality in some organ of the body.

A *lesion* is a visible change in the structure of tissue.

Pathology is that branch of medicine which deals with the structural and functional changes produced by disease.

Diagnosis is the recognition of disease from its symptoms. It is the art of distinguishing one disease from another. Very frequently the nature of the disease is indicated by a prefix or suffix.

Prefixes.—The prefix "*a-*" means absence of or loss of; as, for instance: asthenia, loss of strength, or exhaustion; atrophy, loss of flesh; aphasia, loss of power of speech; apnea, absence of breath.

The prefix "*dys-*" means difficult; as, for instance, dyspepsia, difficult digestion.

The prefix "*hemo-*" relates to blood; "*hydro-*," to fluid; "*pyo-*," to pus; "*hyper-*," to excess.

Suffixes, or endings of words, also frequently give a clue to the character of the disease; as, for instance, the suffix "*-itis*" always indicates a disease characterized by inflammation; "*-oma*" denotes a tumor or enlargement; "*-emia*," a morbid condition which is in the blood; and "*-uria*" relates to the urine.

Symptoms are manifestations or signs of disease. These may be objective, that is, seen or observed; or subjective, felt by the patient. The principle subjective symptom is pain.

The *methods of making an examination* into a patient's condition include:

1. Inspection or careful ocular observation.
2. Mensuration or examination by measurement and comparison of symmetry.
3. Palpation or the use of the sense of touch.
4. Percussion or the study of sounds produced by tapping or percussing a part.
5. Auscultation or the study of sounds of the heart or lungs by means of the ear.

The *stethoscope* and *phonendoscope* are instruments used to aid the ear or intensify the sound in this method of examination.

Inspection is commonly combined with questioning of the patient.

A *family history* of some kind is frequently essential to diagnosis. The general history will include name, age, sex, race, occupation, and social condition.

The family history includes age of parents if living, cause of death if dead, condition of health, and causes of death of immediate blood relatives.

Present history relates to present conditions and habits of living at time of attack, date of present illness, and mode of onset. A full present history would note the state of general nutrition; appearance of skin and face; anything out of the ordinary in position or movements, temperature, pulse, and respiration; general conditions as regards bowel movements and urine, appetite, thirst; location and character of pain; effect on other organs; general disorder of function; other physical defects, if any; character of discharges, and previous treatment.

Prognosis is the prediction as to the result or termination of disease.

Diseases of the solid structures of the body may be due to several causes, among which are:

1. Mechanical violence.
2. Obstruction.
3. Chemic action.
4. Bacterial invasion.
5. Abnormal vital action.

In the first class would be placed surgical wounds, bruises, fractures, and injuries due to chemic causes, such as burns.

Diseases due to obstruction may result from the effects of gravitation, from pressure on organs by morbid growths or enlarged glands, or from deranged respiration owing to mechanical obstruction of various kinds.

Structural derangement due to abnormal vital action may result in changes in the size of the organs, as hypertrophy and atrophy, exudation, degeneration, and morbid growths.

Many forms of degeneration and morbid growths are said to be due to changes resulting from malnutrition of the parts. The degeneration may be of a fatty nature, in which the normal tissue changes into fat. It may be an absorption of the normal tissue, and a deposit, waxy or chalky in character. This form of degeneration sometimes attacks the spleen, liver, and kidneys. Fatty degeneration may take place in the muscular tissue of the heart or kidneys.

In *atrophy of proper tissue* there may be at the same time an increase in size due to deposit of abnormal tissue, the abnormal tissue appropriating to itself the nutrition that should have been assimilated by the normal tissue.

In *hypertrophy* the increased size may be due to increased growth of normal tissue or from stretching, which results in increased volume. In hypertrophy of the heart the muscles of the heart may be enlarged or the cavities dilated, or both forms of hypertrophy may exist in the same organ.

Changes in the tissue take place, such as hardening or softening. Frequently these occur as the result of inflammation.

Cicatricial tissue is a tissue which results after repair of a wound. Granulation tissue is new tissue formed in a wound in which the skin or normal protective tissue has been destroyed. This tissue forms the cicatrix or scar.

Exudates are substances deposited in or on the tissues. Exudates may assume a solid or semisolid form.

A *calculus* is an abnormal concretion occurring within the animal body and usually composed of mineral salts. Calculous deposits occur in or around joints, in the gall-bladder, kidneys, pancreatic duct, bladder, and in various other parts of the body.

Depression is a lowering or decrease of functional activity. It may be local or general. Mental depression or the absence of hope or courage may result from physical depression. Physical depression may be due to deficiency of food, heat, light, or air, to overexertion of a part, to the influence of some poisonous product, or it may be due, in part at least, to mental depression or disorders.

The *blood* is a fluid tissue, and departure from its normal standard may result in changes in the various parts of the system.

Abnormal conditions of the blood may be produced from poisonous elements being retained that should have been carried off by the eliminative system, such as uric acid or carbonic acid. Changes in the proportion of the constituent elements may cause disease of the blood or of other organs. The constituent elements, such as fibrin, water, salts, or the corpuscles, may increase or decrease and produce each its own train of symptoms. Too much fibrin may result in coagulation, too little in a tendency to hemorrhage. Too little albumin means deficient nutrition. Too much blood (plethora) may lead to congestion or engorgement. Various other changes may take place in the blood which influence all the fluids of the body, disturbing both the secretory and excretory organs. Absorption of poisons, either in the form of gases, bacteria, or mineral poisons, may produce disease of the blood, affecting both the fluid and solid portions of the body.

Auto-intoxication is the poisoning by some uneliminated toxin generated within the body. "The clinical results of auto-intoxication may be immediate or acute and violent, with much gastro-intestinal disturbance, or they may be remote, *i.e.*, chronic. In the latter instance such conditions are associated as neuritis, neuralgia, anemia, skin eruptions, like eczema or acne, neurasthenia, melancholia, and miscellaneous toxemias, like goutiness and lithemia. It is not claimed that intestinal auto-intoxication is the sole cause of these conditions, but it is usually associated with them and often both antedates them and makes them worse." (Thompson.)

Disease may terminate in recovery, in secondary processes, or in death.

Recovery may take place by crisis or lysis.

Crisis is a term used to denote the sudden or rapid disappearance or subsidence of the symptoms of disease. It is usually marked by a fall of temperature, profuse perspiration, and great weakness.

Lysis is the gradual disappearance of the symptoms of disease.

Pain has been defined as a modification of the general sensations caused by excessive irritation or stimulation of the nerves. Pain may be of a sharp, throbbing, lancinating character, indicating active inflammation. It may be dull, heavy and continuous, as in passive congestion. It may be spasmodic or paroxysmal or constant. It may be reflex, felt at a point remote from the condition causing it. It may be irritative, producing a general consciousness of disturbance hardly to be defined or localized.

Spasms.—A sudden, rigid, involuntary contraction of a muscle is known as a spasm. Spasms that are rapidly interrupted are called clonic spasms. This form may vary from a slight twitching or tremor to a decided shaking. Sneezing, hiccough, and the jerky movements seen in hysteria, epilepsy, and convulsions are forms of clonic spasm.

Tonic spasms are painful continuous persistent contractions of muscles, accompanied by marked rigidity, as in tetanus.

Hysteria may resemble almost any kind of pain in any organ, and almost any disease. It is a condition usually associated with diseased or weakened nerves, and in hysteria some pain is probably present. The pain or discomfort is real, not imaginary, though it may be exaggerated, because of the mental condition of the patient, and unconsciously to himself. The pains may be shooting, or may rapidly shift from one point to another because of defective nutrition involving the whole nervous system. Where there is a suspicion that the subjective symptoms are purposely exaggerated or feigned, the patient's mental attitude should be studied, as well as the physical signs.

Observation of Symptoms.—Every nurse should avoid being an alarmist, and at the same time cultivate keenness of perception and ready sympathy. It is better to be imposed on a few times than to withhold assistance or sympathy when the condition complained of was real and genuine. There is probably no one other point in a nurse's training which is equal to this in importance.

Nurses should study to avoid careless, vague generalization in bedside records, and cultivate the habit of making each statement of practical value in the study of the case. To observe clearly and closely; to remember correctly; to be able to state definitely, colorlessly, the precise facts about any patient, is an accomplishment which adds greatly to a nurse's value—one never acquired by accident. The ability to decide which symptoms are of greatest value to be noted comes as the result both of experience and training, combined with the cultivation of the observing powers at the bedside. There is a strong tendency to routine in the making of observations and recording them, or recording, for instance, temperature, pulse, etc., bowel movements, treatments given, and of failing to note special symptoms which bear directly on the case. The study of the theory of symptoms is important, but the real study must be done at the bedside. The following are special points that should be noted:

Mental Condition.—Whether normally intelligent or alert, stupid or dull, keenly sensitive to sounds and surroundings or indifferent or oblivious; whether questions are answered quickly and intelligently or answers are vague and incoherent.

Notice also whether patient has his mind centered on any particular organ of the body; whether the tendency is to dwell on some morbid condition real or supposed; whether worry, fear, or apprehension is adding to the difficulty of combating the disease. The powerful influence which the mind exerts over bodily conditions is only beginning to be appreciated.

Voice.—Whether thin and weak, strong and full, husky or clear, whether speaking seems easy or difficult.

Facial Expression.—Whether pale, haggard, and anxious, dull and listless and vacant, flushed or excited, tranquil and composed.

Eyes.—Whether abnormally sunken or protruded, bloodshot or inflamed, unusually sensitive to light, abnormally bright or restless. Pupils may be contracted or dilated or unequal in size. There may be discharge from irritation or inflammation. Eyelids may be swollen or puffy.

Lips.—Whether pale and bloodless, cyanosed, swollen, dry, fissured or covered with sordes.

Mouth.—Whether breath is foul and offensive, gums swollen, inflamed or sore, mucous membrane healthy or ulcerated, patches on tongue or throat, dark lines on gums, secretion of saliva decreased, increased, or apparently normal.

Tongue.—Whether clean, furred, or heavily coated; whether coating is white, brown, or black; whether moist or dry; flabby or firm, swollen or fissured. Note manner in which patient puts out his tongue, whether slowly and with difficulty or quickly without hesitation.

Skin.—Whether smooth, firm, pink, and clear, as in health; flabby or wrinkled; whether there is apparent loss of flesh; whether moist, dry, or rough, pale, flushed, jaundiced, sallow, bruised, or discolored; whether patches, scars, spots, or eruptions are present; whether shiny or waxy or cyanosed; whether swellings or edema are seen. If perspiration, whether localized or general, profuse or scanty, intermittent or continuous; time, duration, and odor.

Structure of Body.—Whether deformities or protrusions, asymmetry, or lack of development, or apparent wasting of muscular tissue. Whether tissue is firm and elastic or flabby.

Position in Bed.—Whether patient has tendency to persistently fall on his back, restless, nervous, and disturbed;

quiet and apparently comfortable, or quiet because movement causes pain; lying on one side constantly; limbs drawn up or relaxed; whether dyspnea or orthopnea is present, or tendency to slip to foot of bed.

Sleep.—Whether quiet, restful, and normal or troubled and disturbed, light or heavy; facial expression during sleep; position in sleep; movements or muscular twitchings; unusual drowsiness or wakefulness; length of sleep; inability to sleep; manner of waking, whether naturally or with a start or cry.

If sleeplessness is complicating disease try to discover cause, whether due to pain or discomfort or to mental condition which aggravates sleeplessness. Fear of not going to sleep is one of the common causes of sleeplessness—a cause which a nurse should be able to help to relieve.

Temperature.—Whether normal or subnormal, mild febrile, high fever or hyperpyrexia; whether equable or with marked exacerbations.

Pulse.—Whether full, strong, bounding, weak, compressible, wiry, thready, irregular, intermittent, dicrotic, slow, rapid.

Respiration.—Whether quick, slow, very slow, labored, shallow, cautious as if painful, thoracic, abdominal, irregular, quiet, stertorous, deep, undulating, asthmatic; whether hiccough, sneezing, yawning, or sighing.

The degree of expansion of the lungs during inspiration is important to be noted in many cases. "Abdominal breathing occurs principally in children. The ribs remain practically motionless and the respiratory action is shown chiefly by the movements of the abdominal wall."

Cough.—Whether heavy, hollow, dry, tight, hacking or tickling, short, sharp, nervous, continual as if occurring from habit; brazen, paroxysmal, hard or loose, choking; whether accompanied with expectoration.

Expectoration.—Note character, amount, odor, consistency, color; whether clear, frothy, tough, tenacious, rusty, or red; offensive or free from odor; profuse or scanty; time when most profuse; whether solid fragments are seen, and any increase or decrease in amount.

Appetite.—Whether normal or defective or perverted, ravenous or capricious or abnormally increased.

Disorders of Digestion.—Whether nausea, vomiting, or flatulency; time when disturbance occurs; apparent connection with food or drugs; color, odor, consistency, and frequency of vomited matter, composition; whether bile is present or unusual amount of mucus or particles of undigested food; whether vomiting is easy or difficult and painful or preceded by pain or followed with exhaustion; combinations of symptoms accompanying nausea.

Remember that in cases where digestive difficulty is prolonged, the mental condition of the patient is probably influencing the general condition and that the mind needs intelligent treatment quite as much as the organs concerned in digestion. The nervous element in digestive disorders should never be ignored.

Evacuations.—Note quantity; composition, whether of indigestible residue or food capable of digestion; consistency, whether liquid formed or hard; color; characteristic effects of drugs administered; presence of mucus, pus, or blood; color of blood in stools, whether dark and clotted, as from old hemorrhage, or bright and liquid, as from recent. Note straining or tenesmus, and whether stool was accompanied, preceded, or followed by pain; whether marked exhaustion followed. Note, also, passage of flatus or tympanites.

Urine.—Note color, odor, specific gravity, reaction; whether clear or clouded, smoky, bloody, thick; whether sediment is present and character of sediment; whether changes take place soon after it has been voided. Note whether dysuria is present, also frequency of micturition, and amount voided each time and in twenty-four hours. Notice, also, evidences of suppression and retention, characteristic effects of certain drugs, and conditions that modify amount and character of secretion of urine.

"Watch the bladder" is an important precaution and should be observed in practically all cases of illness. Overdistention of the bladder may occur even when the patient is able to pass urine naturally. Very often, especially in aged patients, the bladder does not empty itself when urine is passed. A patient may be too ill to complain even when the bladder is overfull.

Care of Specimens.—The examination of specimens is, as a rule, a doctor's duty. The securing of them and care of them often depends on the nurse.

For ordinary routine purposes the specimens of urine may be secured from the quantity voided in a clean vessel which has been scalded previous to using. It is poured into a clean test-tube or glass, covered, and labeled with the patient's name, date of admission, and the ward or room occupied. If the urine is to be tested for bacteria the receiving vessels should be sterilized before use, and it should be aseptically covered. See urine chart, page 136, for suggestions regarding measuring.

To secure a specimen from a baby, it is wise to make the attempt immediately after feeding or on awakening from sleep. A piece of clean rubber or oilcloth may be so placed as to conduct the urine to a vessel arranged for the purpose. A piece of sterile absorbent cotton may be placed so as to catch the urine, which is then pressed into a vessel. In boy babies a bottle may be kept in position by means of adhesive or a tape passing around the waist and attached to the neck of the bottle.

Feces.—It is never difficult to secure specimens. One of the most convenient receptacles to hold the specimens until they can be examined is a large test-tube, previously scalded. The mouth is stopped with a large cork or wooden stopper over which is drawn a piece of rubber tubing which renders the tube air-tight.

Sputum.—A wide-mouthed glass bottle, previously sterilized, may be offered to an adult to expectorate in. It is then aseptically covered and sent, properly labeled, to the laboratory. A disinfectant solution should be used to wash the outside of the bottle before sending it. If a child refuses to cough up his sputum, wrap a bit of sterile gauze around the finger or on a probe and quickly press it against the back of the throat. This will cause slight coughing and the sputum will adhere to the cotton. This is then placed in a wide-mouthed sterile bottle labeled, "For examination." To take a culture from the throat, see page 56.

Blood.—These specimens for blood-culture are usually secured by the physician in a specially prepared glass tube and a special diluting fluid is added. The blood is usually obtained from one of the veins of the arm. The nurse's duties consist in the aseptic preparation of the part and the necessary instruments and utensils. Blood-smears for microscopical examination of blood-cells are obtained on glass slides, which must be rendered sterile before using. The lobe of the ear or a finger-tip are often selected, and are made aseptic before the puncture is made. The method of managing these specimens should be taught by careful practical demonstration if nurses are expected to secure them.

Specimens of tissue secured in the operating-room should be promptly labeled, after being wrapped in a piece of sterile gauze, and sent to the laboratory. One person should be held responsible for the proper care of these specimens until they reach the laboratory. This duty may properly devolve upon the chief surgical nurse.

Nervous Symptoms.—Note involuntary muscular twitchings or contractions, tremulousness, tendency to drop things, picking at bedclothes; convulsions, their character, duration, and frequency; chills, whether accompanied with fever or not, time, duration, frequency, regularity, degree of severity; character of pulse during and after chill.

Paralysis.—A loss of motion or sensation in a living part or member has many peculiar manifestations.

Disorders of Consciousness.—Note incoherence, delirium, whether low muttering, quiet or busy, noisy, violent, or maniacal; tendency to irritability, argumentative, unreasonable or antagonistic. Note, if stupor is present, whether patient can be roused by speaking to him, or whether condition is one of insensibility from which he cannot be wakened, or coma-vigil—continuous sleeplessness with partial unconsciousness.

Disorders of Sensation.—Special senses may be perverted; hearing may be abnormally acute or defective, unusually sensitive to noise or indifferent. Taste may be blunted, destroyed, or impaired. Certain drugs produce characteristic taste, as do also special diseases. There may be hyperesthesia—abnormal sensitiveness of a part—or anesthesia—loss of sensation, or partial loss of sensation.

Discharges.—Note abnormal discharge from any cavity; its color, odor, consistency, and amount. A discharge may be normal in one case and abnormal in another, as, for instance, the appearance of blood from the vagina in a woman who is pregnant and the menses have ceased for some months.

Weight.—The weight of a patient as compared to height and age is important to be noted in many cases. In some conditions it is important that weight be increased and in others important that it be reduced and an effort made to maintain an average normal weight. Rapid loss of weight occurs frequently in fevers but is often an important indication of serious trouble when combined with other symptoms, when no fever is present.

In all cases the age and general habits of the patient need to be considered. In children the character of the cry, habits of walking, and various other symptoms may have special significance.

CHAPTER II

ACUTE COMMUNICABLE DISEASES

Fever is generally understood to be any disease characterized by marked increase of temperature, acceleration of pulse, increased tissue destruction, restlessness, etc.

Specific fevers are those due to a specific cause which produces that disease and that only. In most of these the disease is due to a microörganism, each particular germ producing special manifestations of its presence.

Fever Symptoms.—Certain general symptoms are characteristic of all fevers, and local complications may modify or exaggerate the symptoms of any fever. The general symptoms of acute febrile affections are dry, hot skin; thirst; full, rapid pulse; coated tongue; digestive disorder; loss of appetite; headache; pain in the back and limbs; elevation of temperature, and increased waste of tissue due to a perversion of the physiologic processes. An increased amount of carbonic acid gas is thrown off by the lungs. The solid constituents of the urine, also, will be found to be increased, especially the urea, which represents destruction of nitrogenous elements of tissue and food. A partial compensation for the waste of tissue is made by the increase in the consumption of oxygen. This point needs special emphasis, for increased consumption of the oxygen requires an increased air space, and special attention to ventilation. Various classifications of fever have been given.

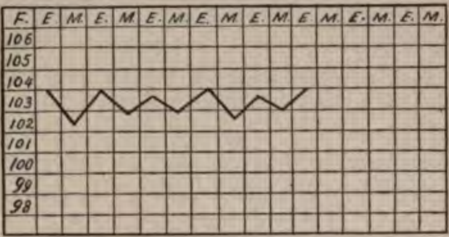

Fig. 1.—Represents a continued fever. It is observed mostly in erysipelas, acute tuberculosis, lobar pneumonia, and typhoid fever (Kerr).

Continued fevers are those in which the elevation of temperature is continuous from the onset without marked remissions. (Fig. 1.)

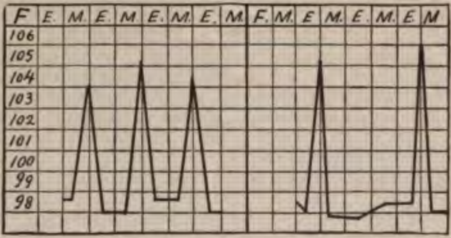

Fig. 2.—Represents intermittent fever. The left-hand half showing the quotidian type, while the right-hand half shows the tertian type. It is significant of malaria (Kerr).

Periodic or intermittent fevers are those in which regular periodic remissions of fever occur. (Fig. 2.)

Eruptive fevers are those characterized by a rash distributed generally over the body.

Congestive fevers are those in which there is marked tendency to congestion of the internal organs.

Stages.—Specific fevers, as a rule, may be divided into five stages.

The *first stage* is the period of incubation, which begins when the specific poison enters the system, and continues till active manifestations of its presence are given.

The *stage of invasion* begins with the onset of the fever. The duration of the disease is calculated from the beginning of the second stage.

The *stage of advance* marks the full development of the disease—when the fever reaches its height.

The *stage of resolution* or termination may be ushered in suddenly by crisis, as in lobar pneumonia, or gradually by lysis, as in typhoid fever. Relapses are common in this stage.

The *stage of convalescence* begins when the critical symptoms subside and temperature reaches normal. It is one of the most important stages in the course of a fever. In cases terminating by crisis the patient is left often in a condition of great exhaustion, and complications are likely to occur in this stage, as in any other stage.

Koch's circuit in the study of germ diseases has been generally accepted as law. It is briefly as follows:

1. The germ must be found always where the disease is present.
2. It must be capable of development in proper culture media outside of the body.
3. These cultures must be capable of producing the disease in a healthy animal.
4. The same germ must be found in the inoculated animal as the result of the morbid process.
5. It must be further shown that no other form of microörganism is capable of producing the disease, and that where the original form of bacteria is not obtainable the existence of the disease is impossible.

The *typhoid state* is a term applied to a group of symptoms in which the digestive system is greatly disturbed, the high temperature continuous, the prostration complete, and the patient in a state of low-muttering delirium or stupor.

Isolation.—In almost all communicable diseases isolation is enjoined. In cities certain restrictions are placed on communication with the outside world, but strict isolation in thousands of city homes cannot be practised. This is especially true in houses which have but one bathroom, and in flats of five to seven rooms opening off a central living room. As practised in many cases isolation is a farce.

It becomes a matter of the nurse minimizing the dangers in every possible way, and her responsibility is great.

Separate utensils for the care of the room—broom, bucket, mop, dust-cloths, a hand-basin for the nurse, a hand scrub-brush, plenty of soap, a wash basin for the patient, a quantity of old newspapers, a waste basket or box which can be destroyed later, and an old sheet as a receiver for infected clothing until disinfection can be attended to—are among the things required. A large paper sack is excellent to use instead of a waste basket as it with its contents can be immediately burned without handling of the contents. Infected articles of any kind should never be dropped through a clothes chute if it be lined with wood or if it cannot readily be disinfected.

A set of dishes specially for the patient, paper napkins, to be destroyed after using, and in cases in which there is but one bathroom, a large deep slop jar to receive all liquid waste, thus lessening visits to the bathroom, will all be needed and can be secured in any ordinary home.

Attention to the smallest details is necessary. In her instruction to the family, the most important preventive measure to be emphasized is *the liberal, constant, and intelligent use of soap and water.* Special attention should be given to careful scrubbing of the hands with soap and water at frequent intervals and always before taking food. The apron worn in the care of the patient should always be slipped off before going to meals.

General Management.—The broad principles of hygiene and the general management of patients afflicted with most of the acute communicable diseases are not widely different. For a few we have what is regarded as a specific, such as the antitoxin treatment for diphtheria, and quinin in malaria; but, apart from these, the constitutional treatment in general is symptomatic and expectant. Prevention of the spread of the disease requires that the nurse know how specific poisons enter the system, how the infectious matter is thrown off in each disease, and how to deal with infected articles.

The *fever* results from an increased manufacture of heat and a decreased radiation. The decrease in the radiation of heat is counteracted to some extent by promoting perspiration and evaporation of surface moisture. Unless the fever is excessive or persistent, interference is not required.

A *persistent high temperature* is dangerous to life; owing to the excessively high temperature and the action of bacterial poisons on the tissues and organs rapid destruction of tissue results. There is also a loss of assimilative power, the waste is not readily repaired, and prostration becomes marked.

The high temperature depresses the heart and nervous system and greatly weakens the vital functions, therefore the reduction of temperature is an important thing to be accomplished. The medical profession are agreed on the use of water to accomplish this object. The method of application varies with the facilities for its use, the individual condition of patients and the preference of the doctor. The methods most effective in controlling fevers are cold sponging, ice compresses to the spine, wet sheet pack, graduated full bath, ice-water enemata and ice-bags.

Some advantages of water treatment in fevers are: 1. It reduces temperature gradually, in accordance with Nature's plan of putting out fire with water. 2. It soothes the peripheral nerves and calms disturbed nerve centers, lessening insomnia and stupor, and clearing the intellect. 3. It has a tonic action on the nervous system and heart. 4. It stimulates secretory and excretory organs, encouraging perspiration and increased kidney action. 5. It allays thirst by being directly absorbed into the dry and heated tissues.

Antipyretic drugs are occasionally employed, but their use is attended with many dangers in unskilled hands.

Diet in Fevers.—In the chapter on Diet in Disease in Primary Studies for Nurses (page 348) the general principles that should guide in feeding in fevers were stated. These should be reviewed in connection with this lesson. Authorities in general agree that one of the most (if not by far the most) important element in the diet of fever patients in general is to supply nitrogenous food in abundance. It is hardly possible in any fever to maintain the equilibrium between the intake of nitrogenous food and the waste of tissue, but it is believed that when an abundance of nitrogenous food is taken "the proteid matter of the food is burned up or oxidized, instead of the proteid matter of the patient's muscles and other structures. The animal food thus given does not add to the substance of the tissue, but saves them from wasting and combustion. Fever patients commonly excrete much more nitrogen than they take in as food. In so doing it is believed that they first exhaust whatever reserve supply may be on hand in the food proteids previously absorbed, and circulating in the blood, and subsequently draw upon the tissues just as is the case in starvation. In fever the secretion of hydrochloric acid is diminished or suspended in the stomach, and its peristaltic action is so lessened that the food is apt to remain longer than it should, and undergo malfermentation, causing oppression, or pain, nausea, and vomiting. Absorption, also, is much reduced in fever." The stomach may wholly cease its digestive function, leaving the intestine to carry on the work of digestion unaided.

The *nitrogenous* or *albuminous element* in sufficient quantity can usually be supplied in the form of milk and eggs. Proteids are also supplied in foods made with gelatine, in meat juices, broths, and jellies. Fats are sparingly administered, if allowed at all. The carbohydrate element is often added to milk and broth in the form of gruel, flour, or starch thickening for broths, barley, and oatmeal water, etc. The addition of these elements increases the caloric value of the food.

Milk stands first in importance among all fever foods. Gelatine may be added to meat broths to increase the food value. Eggs may be combined with milk or broths. All starchy foods should be thoroughly cooked and strained. The patient's tastes regarding flavoring should be consulted as far as possible.

Monotony in diet needs to be especially guarded against in fever cases. No cases require more skilful management of the dietetic problem than prolonged cases of fever. Nausea and revolt against food must be prevented or combated, if possible. The food must be administered in such a manner that ease of digestion is promoted, and here little details assume great importance.

Water is given freely in all fevers not only to relieve thirst, but to dilute the toxins, promote elimination, and compensate for the rapid exhaustion of the fluids of the body, owing to the excessive heat. A glass of water every hour is none too much for an adult fever patient. The nurse should not wait to be asked for water, but should give it as regularly and punctually as medicines.

TYPHOID FEVER

Typhoid fever may be defined as a general infection due to the bacillus typhosis, characterized by hypertrophy of tissue and ulceration of the lymph follicles of the intestines, swelling of the mesenteric glands, enlargement of the spleen, and essential changes in the tissue of other organs. In most cases it can be attributed to defective drainage and impure water. Improper ventilation, bad food, overcrowding and filthy homes and habits help to lower the resistive power of individuals. It is said that typhoid fever "is an index of the sanitary intelligence of the community." Flies are active

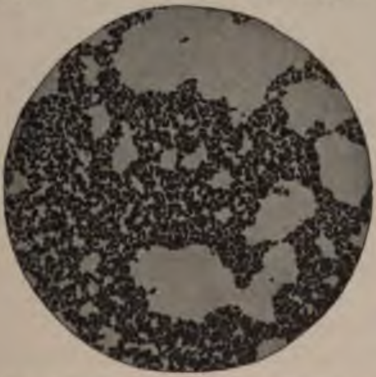

Fig. 3.—Bacillus typhi, × 650 (Heim).

agents in carrying infection, and dust containing the typhoid bacillus may readily be deposited on food. Milk is an especially favorable material for the development of typhoid germs. The bacilli have great resistive power. It is said that under natural conditions they may retain their vitality for almost a year in the upper layers of the soil. They usually die in ice in about two weeks, but have been found to be active after four months. When exposed to the direct rays of the sun they usually die in from five to ten hours. They may retain their vitality in body linen for three months.

The **period of incubation** lasts from eight to fourteen days, sometimes three weeks. The specific poison has a double action—a local action on the glands of the intestine, and a general systemic action on the blood and tissues.

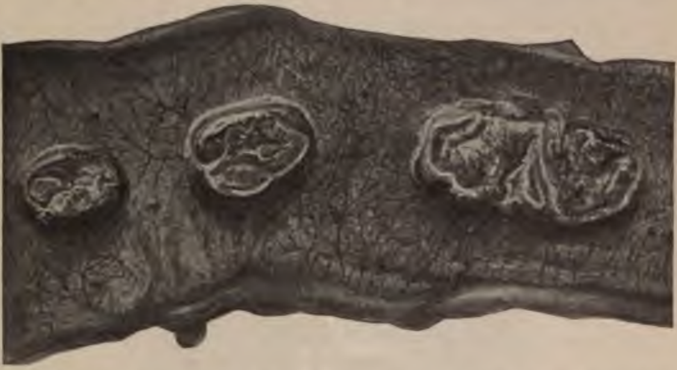

FIG. 4.—Typhoid fever, showing necrosis of Peyer's patches and intense congestion of the bowel (modified from Kast and Rumpel).

Characteristics.—Several types of the disease are recognized, such as the ordinary type with marked enteric lesions; cases in which the intestinal lesions are very slight; cases in which the bacillus undoubtedly exists in the body, but without intestinal lesion; mixed infection in which the existence of the typhoid bacillus favors the growth of other pathogenic bacteria, as the pneumococcus and streptococcus. The best authorities claim that no such disease exists as typhomalarial fever as a distinct affection, though they admit the possibility of both infections existing in the same patient at the same time. The idea of typhoid malaria as a mild form of typhoid fever produces a false sense of security that is always unfortunate. Many diseases, presenting a number of the same general manifestations, have been mistaken for typhoid fever. Careful examination of the blood will usually settle the question.

The Widal test "consists in the addition of the blood or serum of a typhoid patient to culture media containing typhoid bacilli. Microscopically there is seen a clumping of the micro-ōrganisms with loss of motility." (Gould.)

The small intestine is the chief seat of the disease, though a catarrhal condition exists throughout the intestinal tract.

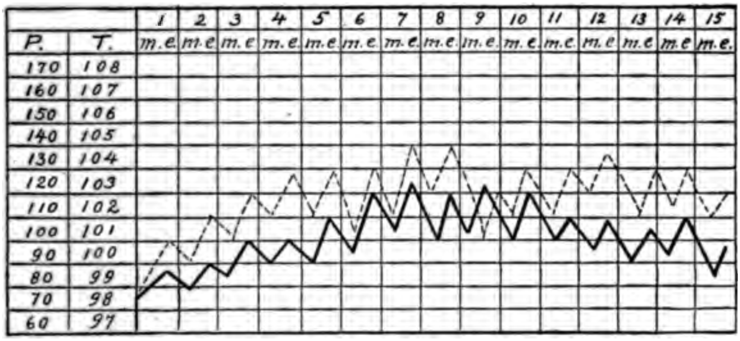

FIG. 5.—Chart of the temperature (——) and pulse (----) in typhoid fever of moderate severity in a male child five years old (Kerr).

A rose-colored eruption, diarrhea, and digestive disorder, tympanites, abdominal tenderness, and enlargement of the spleen are among the characteristic symptoms, but the manifestations of the disease are exceedingly variable. A dicrotic pulse is very common.

The *onset*, as a rule, is insidious, but exceptions to the rule are common. The early stages may be characterized by marked disturbance of the nervous system, with pronounced pulmonary symptoms resembling lobar pneumonia or pleurisy, or with severe gastro-intestinal symptoms, resembling food poisoning, or appendicitis, or with symptoms of acute nephritis, with bloody or smoky urine, albumin, and tube casts. Chills may occur at the onset or at intervals throughout the course of the disease. Nose-bleeding is common. Some authorities claim that constipation is sufficient to cause chills. Such complications as otitis media, periostitis, or pneumonia may be ushered in by chills, or they may occur independent of any of these causes due to septic infection.

In the mild form of typhoid fever distinct symptoms are present, but they are less severe. In the grave or malignant form the gastro-intestinal and nervous symptoms are greatly intensified and fever is continuously high.

Walking Typhoid.—In the latent or ambulatory form, popularly known as walking typhoid, the symptoms are so slight as to cause little notice, and the patient may continue at work till hemorrhage or perforation occurs. Hemorrhage and perforation are complications to be feared even in mild cases.

Complications.—Thrombosis is not uncommon. The vessels most frequently affected are the femoral veins, but it occurs in other parts of the body, and sometimes in superficial vessels. Enlargement and edema of the limbs follow. The thrombus may suppurate, but, as a rule, when collateral circulation is established the swelling subsides. Typhoid gangrene sometimes follows obstruction of the femoral or popliteal arteries.

Common complications are excessive diarrhea, intestinal hemorrhage, which rarely occurs before the third week; inflammation of the gall-bladder, which frequently occurs. Cystitis and retention of urine, pneumonia, pleurisy, nephritis, and bronchitis, all occur as complications. Boils are a common sequel to the disease, especially in patients who have been poorly nourished and in cases in which surrounding sanitary conditions are bad. Typhoid pyemia, and septicemia are not rare.

Cleanliness and *quietness* are of the utmost importance in this disease. In no condition is cleanliness and proper care of the mouth more important. Neglect of the mouth often leads to infection extending through the Eustachian tube to the middle ear, to ulceration of the mouth and tongue, and may in various ways add to the severity of the disease. The care and cleanliness of the nurse's hands are of the greatest importance in this disease. The nurse may easily contract the disease by being careless about her own hands. Always scrub the hands well before taking food.

Hydrotherapy may be practised in a variety of ways. The usual methods are sponging, either cold, tepid, or hot water being used; the wet pack, and the full bath. Hot sponging is more frequently resorted to than in former years, and those who have used it report gratifying results.

Tympanites (meteorism) or gas in the abdomen or intestines is a distressing symptom. Careful management of the feeding problem will be helpful in preventing it in many cases. In giving milk it is always important that it be taken very slowly. Some physicians require it to be given in half-ounce or tablespoon doses to typhoid patients. Various methods of relief are used, of which the most common are hot turpentine stupes to the abdomen; turpentine enemata, or salt solution injections; the insertion of a high rectal tube which will prevent contraction of the sphincter, and, occasionally, drop doses of turpentine by mouth.

Intestinal hemorrhage is a grave complication. The constitutional symptoms resemble those of shock. The usual methods of dealing with it are absolute quiet, withdrawal or restriction of food temporarily, and the use of some preparation of opium. The greatest care must be exercised in using the bed-pan. Ice-bags to the abdomen are usually applied, but their value is a matter on which there is considerable doubt. Stimulants are given if there is a tendency to collapse. Subcutaneous injections of salt solution are frequently used.

Delirium is less frequent than in former years, owing to improved methods of treatment. It is usually combated by the application of an ice-cap to the head, cold baths, or packs, and some sedative, such as bromid, trional, veronal, bromotone, or morphin. A restraining sheet may be necessary if a nurse has several patients to care for in a hospital. *No delirious patient should be left without some one to watch him.* Neglect of this rule has often cost a life. Post-typhoid delirium is not uncommon. A method of mild restraint is shown in the accompanying cuts. The restraining apparatus is made of stout duck. About 4½ yards is needed. The straps fastening to the bed are made by harness makers, leather being used.

The side pieces need to be fastened at the foot of the bed by straps as there are rarely vertical bars at the foot. The sheets when finished are about 6 feet. Width at top about 27 inches; at bottom about 21 inches. The straps fastening to the side bars of the bed are about 12 inches long.

Perforation is a complication always to be feared. It occurs both in the mild and severe forms of the disease, and most frequently in the second or third week. It is believed to occur more frequently in cases where tympanites is constantly present.

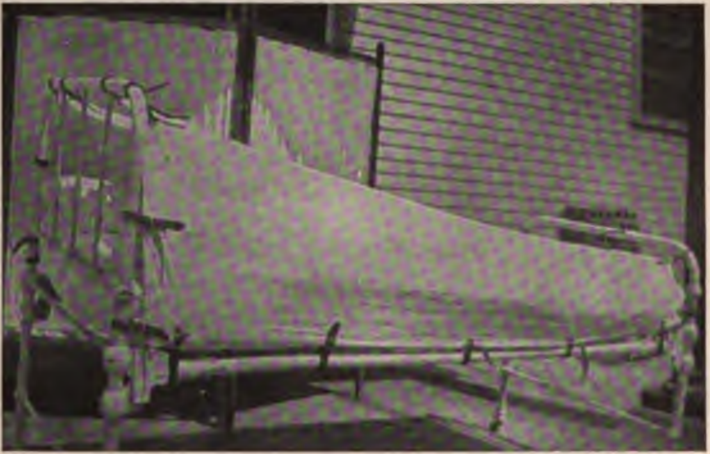

FIG. 6.—Mild restraint for a delirious patient. (Courtesy of, "The Trained Nurse and Hospital Review.")

Causes of perforation may be indiscretion in diet; purges injudiciously administered; a too large or too forceful enema; straining on the bed-pan; sudden turning in the bed. These and various other causes have been held responsible for the immediate onset of perforation.

Symptoms of Perforation.—"A patient in the second or third week of the disease, who at various times has had slight or more severe stabbing pains in the abdomen, who is much distended and tympanitic, who perhaps is somewhat apathetic, who is apt to have retention of urine and has perhaps lost control of the fecal evacuations, such a patient should be watched hourly."[1]

Pain is the most valuable subjective symptom, though in a patient who is in a semistupor no pain may be complained of. There may be only a gradually increasing discomfort in the abdomen, with no sudden, sharp pain. The facial expression changes markedly. *Vomiting* in cases in which it occurs for the first time, in connection with these other symptoms, is of special significance. Violent vomiting may cause a perforation, or may follow it. Perforation is frequently fatal, though recoveries do sometimes occur.

Prophylaxis of Typhoid Fever.—Isolate all dishes used by typhoid patients, wash them separately, and boil daily. The sordes which collects on the teeth and mouth is a mixture of food fragments or broken-down epithelium and microörganisms, and is capable of conveying the infection. Use a separate thermometer for typhoid cases. Keep it in a solution of bichloride, 1 : 1000, which is changed daily. Disinfect linen in a solution of carbolic acid, 1 : 20, for two hours before sending it to be mingled with other clothing in the laundry. Milk of lime and chlorid of lime are among the best chemical disinfectants for stools. Exposure for an hour is necessary for thorough disinfection. The urine and vomited matter in a large proportion of cases contain the typhoid bacilli, and should be disinfected with carbolic acid, 1:20. Bed-pans and urinals should be isolated, disinfected each time, and scalded daily. Separate syringes and rectal tubes should be provided, and boiled after use. Tubs and basins should be disinfected with carbolic acid. Special care should be given to hands and nails after contact with typhoid patients. Bedding should be subjected to steam sterilization after the case terminates.

A preventive inoculation was tried with some success in the South African War, and was highly recommended as worthy of experiment as a means of diminishing typhoid fever, especially among the soldiers. Since that time its use has been greatly extended. A considerable number of hospitals have arranged to give the nursing staff the benefit

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[1] Herrick.

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of the protection it affords. Major Frederick Russel, of the U. S. Army Medical Corps, is quoted as stating: "It has now been sufficiently demonstrated that in anti-typhoid vaccine we have a simple, harmless, and effective means of prophylaxis which can be used to supplement all the usual sanitary measures." A bouillon culture of the typhoid bacillus of high virulence is injected. Special symptoms, such as nausea, local tenderness, fever, and congestion, follow, which subside in a day or two.

A *sterilizing hopper* for the disinfection of infectious excreta is the safest of all methods of disposal. Utensil sterilizers, in which bed-pans and urinals used by fever patients are subjected to boiling, are in use in some leading American hospitals, and mark a significant advance in methods of prevention.

Convalescence after typhoid fever requires as careful management as when the disease was at its height. Relapses are common, and occur, in the majority of cases, as a result of indiscretions in diet. No solid food till the temperature has been normal ten days is a rule that is quite generally observed. Semisolid foods, such as custards, milk-toast, cereals, etc., are permitted within a few days after the temperature drops to normal. Many practitioners allow solid foods earlier in convalescence, but the matter is one in which the nurse should exercise great caution. In other respects, the management of the convalescent period after typhoid fever does not differ much from that in other diseases.

RULES FOR PREVENTION OF TYPHOID INFECTION

In general, remember—

Typhoid is always either eaten or drunk.

The hands are the chief carriers of infection.

1. Drink and give to your patient only water which you know to be clean or which has been boiled.

2. Eat no food which has been in or near a typhoid ward or room. Do not leave food near a typhoid patient longer than is absolutely necessary.

3. Destroy every fly in a typhoid ward or any adjoining room.

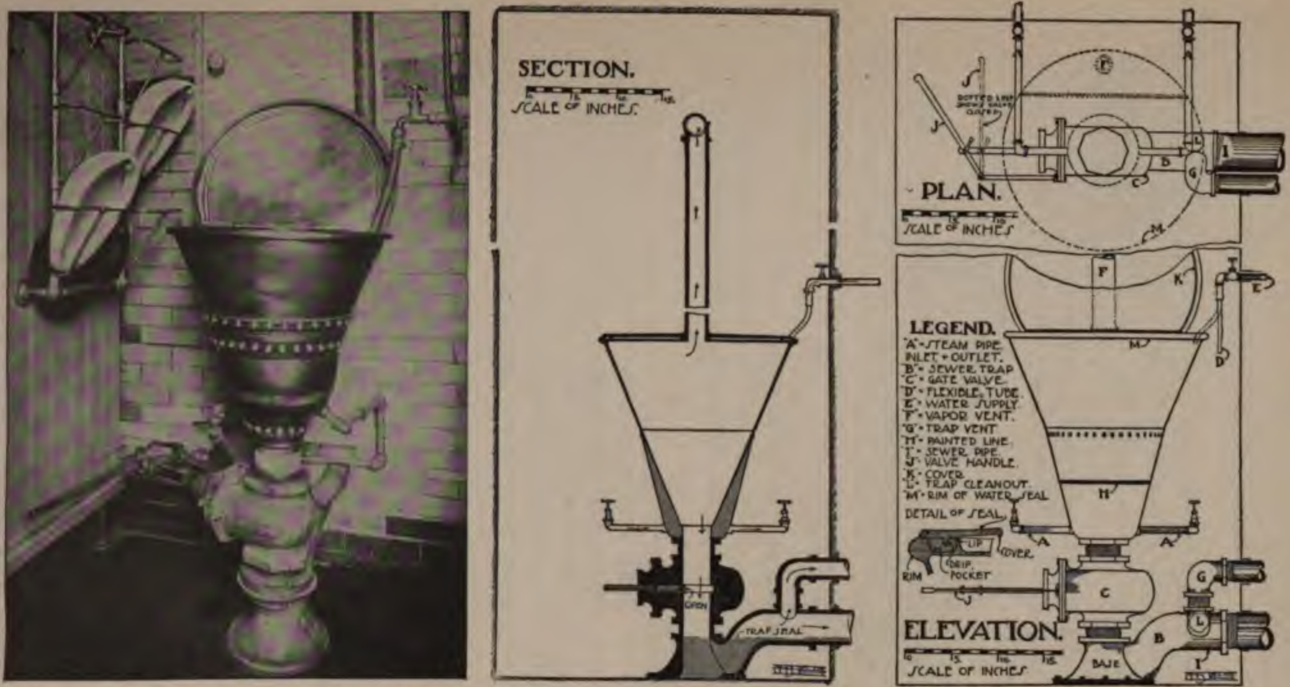

FIG. 7.—Sterilizing hopper for the safe disposal of infectious excreta in hospitals. When infectious discharges are to be sterilized the gate valve is closed. Through the rubber hose at the right water is turned on for washing of utensils, and is allowed to enter the hopper to the line H. Steam is then turned on through the steam inlet. Boiling takes place almost immediately, and after five minutes' boiling the gate valve is opened to allow the contents to escape and the hopper is flushed by means of the hose attached to the faucet.

4. Scrub and disinfect hands after each handling of patient or utensils, and before going to a meal or off duty.

5. Put on a clean apron each day. Do not let bedding get against your gown. Keep a separate apron convenient, which can be worn during meals in the dining-room.

6. Do not use a handkerchief while caring for a typhoid patient.

7. Keep the hands clean. Do not soil them with infected material. Wear gloves whenever practicable.

8. Cleanse and disinfect hands before writing up the patient's record. Do not keep the chart in the patient's room.

9. Disinfect your hand-brush after each using, and do not lay it down while scrubbing. See that no one else uses your towel.

10. Disinfect all typhoid linen and bedding.

11. Disinfect all utensils each time that they are used.

12. Remember that convalescent patients are sources of infection.

For superintendents:

Do not put young, inexperienced nurses on typhoid duty. They cannot possibly appreciate the importance of precautionary measures taught, and are much more liable to infection.

Keep a printed routine before them.

Have your nurses vaccinated against typhoid.

Be especially watchful in unusually busy periods that all possible precautionary measures are used. Experience has shown that nurses are apt to grow careless about preventive measures, well understood when they are unusually busy.

IMPORTANT POINTS IN TYPHOID FEVER NURSING

Plenty of fresh cold air and water to drink are essentials in the care of a typhoid patient.

A glass of water every hour is none too much.

Quiet is of the greatest importance. Keep the patient absolutely at rest in the recumbent position. Remember that undue exertion increases the danger of hemorrhage and puts an extra burden on the heart.

The chief dangers to be feared are hemorrhage and perforation. Sudden fall of temperature and quickened pulse-rate are characteristic of both. In perforation there is sharp, severe pain. Note the causes of perforation, page 48, and try to guard against them.

The care of the mouth is of special importance in this disease.

In giving cold packs or sponging, avoid exhausting the strength by too much turning.

Never leave a delirious typhoid patient alone.

In delirious patients overdistention of the bladder is liable to occur even when urine is voided frequently and unconsciously.

The manner in which milk is administered has much to do with its digestion in this disease.

Convalescence in this disease is a treacherous period and needs careful management.

The nurse's responsibility is great regarding disinfection.

Remember that the nurse's own hands may easily carry infection into her own mouth if not properly and intelligently cared for while nursing.

Diets.—The tendency is more and more to make each patient a study in regard to diet and to have fewer "standard dietaries" or "standing orders" in regard to this phase of treatment. (For specimen diets see appendix.)

CHAPTER III

ACUTE COMMUNICABLE DISEASES (Continued)

DIPHTHERIA

DIPHTHERIA is a specific, communicable, acute disease, characterized by a membranous exudate usually upon the fauces or mucous membrane. It is caused by the bacillus diphtheriæ, otherwise known as Klebs-Löffler bacillus. While the disease attacks the throat most frequently, it may attack any of the mucous membranes of the body. Any open wound may be the seat of the disease, and a false membrane form on it with the usual constitutional symptoms of the disease. The infection is readily communicated. The membranous exudates from the throat throw off the bacillus, or the secretion from the throat and nose of convalescent patients may contain the bacilli in great quantities. The nurse's hair affords a good lodging place for the germs. The virus clings with great tenacity to bedding and infected articles, as books, toys, and clothing. "It is not often spread by air. It is not caused by bad plumbing or dirty houses." (W. A. Evans, M. D.)

The *most susceptible ages* are from three to twelve years, but individuals of any age may be attacked. Predisposing elements in children are enlarged or inflamed tonsils, chronic nasal catarrh, decaying teeth, and lesions of the mucous membrane of the nose and throat.

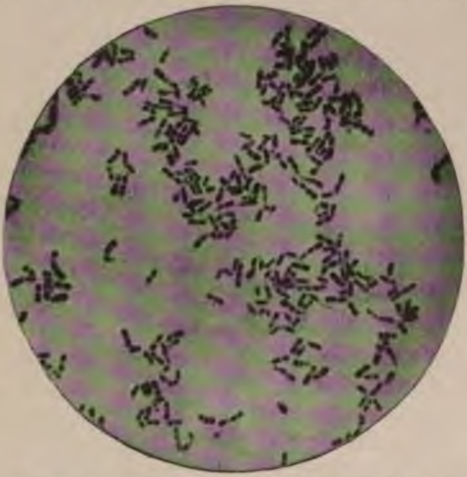

FIG. 8.—Bacillus diphtheriæ, × 1000 (Fränkel and Pfeiffer).

The *period of incubation* varies from two days to a week, and the symptoms at the onset are the ordinary febrile symptoms, with usually soreness of the throat and difficulty in swallowing.

Symptoms.—The constitutional and local symptoms vary greatly. The attacks differ in intensity from the mild cases with but few definite symptoms, to those in which extensive involvement of the larynx and nasal cavity occurs, and the patient quickly succumbs from suffocation. Other cases are marked by great prostration and depression of the vital organs, in which the condition known as "the typhoid state" develops. Other forms are followed by paralysis, which may assume various forms. It may occur in the soft palate and cause inability to swallow fluids, the dose returning through the nose. It may occur in the eye, causing strabismus, or in the lower extremities.

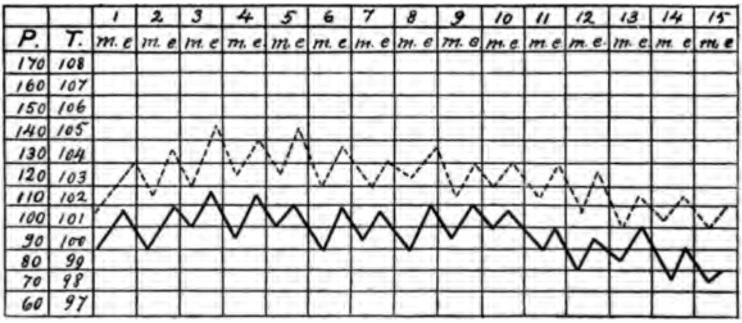

FIG. 9.—Chart of the temperature (------) and pulse (——) in diphtheria. Child four and one-half years old (Kerr).

Complications and Sequelæ.—Hemorrhage from the nose and throat may occur. Skin rashes and urticaria are not uncommon. Bronchitis and renal complications are always to be feared. Albuminuria is present in most severe cases and acute nephritis is not unusual. Pneumonia is a frequent complication. Paralysis is the most important of the sequelæ. It is rarely permanent, though recovery may be delayed three months. Paralysis is said to occur less frequently when antitoxin is used very early in the disease. Collapse of the heart is always to be feared. It may occur at any stage, even after six weeks. Slow pulse is a more serious indication than rapid pulse in this disease.

A bacteriologic examination is used in most cases to clinch the diagnosis. The best authorities recommend that all throat affections of children be regarded as suspicious, and isolation and disinfection practised until the diagnosis is positive.

Prophylactic measures during the interval of uncertainty regarding the diagnosis consist in complete isolation of the patient, thorough disinfection of all articles coming into contact with him, and careful watching of all symptoms.

A *culture* must be taken before bacteriologic examination can be made. To take the culture is sometimes a nurse's duty, though usually it is done by the doctor. A sterile swab of cotton on the end of an applicator or wire, also sterile, is rubbed lightly over the surface of the throat and tonsils, and then drawn gently over culture-media or placed, without touching any other object, in a glass tube containing culture-media; the mouth of the glass is stopped with sterile cotton, properly labeled, and sent to the laboratory. There it is placed in an incubator and kept at body heat. The germs grow and multiply, and in twelve hours a positive diagnosis can be made. Culture-tubes are provided free by most progressive boards of health.

Management.—Since the introduction of the antitoxin treatment the local treatment of diphtheria is very simple, provided the antitoxin is given early enough. Symptomatic treatment to prevent, control, or avoid complications or sequelæ vary with the needs of different cases.

Various solutions are used for the disinfection of affected parts. A favorite is tincture of perchlorid of iron, 1½ drams; carbolic acid, 20 minims; glycerin and water, of each 1 ounce. It is applied with a swab or atomizer. Peroxid of hydrogen has given good results. In extensive involvement of the larynx, moist air is secured by the use of a steam tent. Intubation or tracheotomy are resorted to in cases of obstruction of the larynx. Rectal feeding and feeding by stomach-tube are sometimes resorted to in cases of severe pharyngeal involvement. The usual supportive and stimulating treatment of acute febrile disorders is used.

Antitoxin is considered safe and usually efficacious to prevent, or, if used in the early stages, to cure. It is recommended that all children who have been exposed to the disease should be protected by this method. The characteristic effects produced by this treatment may be summed up as follows:

1. A diminution in the secretion from the throat and nose.
2. Shrinking of the false membrane.

3. Disappearance of the swelling of the fauces.
4. Absence of the fetid odor.
5. Abating of acute symptoms and general improvement.

Urticaria, and occasionally arthritis, may follow its injection, but soon subside. The favorite places for injecting it are the outer side of the thigh, the upper chest region, and the abdomen.

"Antitoxin neutralizes the toxin. Whenever a case of diphtheria gets well it is because toxin has been neutralized by antitoxin. Either the antitoxin has been given hypodermically or else the patient has made it for himself. Taking it hypodermically gives a higher rate of recovery, because as much can be taken in ten minutes as the patient can make in ten days. There is no danger from using antitoxin. Paralysis after diphtheria occurs on account of the diphtheria, not on account of antitoxin. Diphtheria paralysis was recognized one hundred years before antitoxin was discovered." (W. A. Evans.)

Heart failure may occur at any time during the course of the disease, and especially during convalescence. Therefore, remedies for dealing with this emergency should be in readiness. Rest in bed is of the utmost importance. Sudden movement or attempts to sit up should not be permitted until the temperature is normal.

Rules for Avoiding Diphtheria.—Avoid the special contagium of the disease. Even the mildest case of diphtheria is dangerous. The contagium from a mild case may impart the disease in its most virulent form.

Do not let a child go near a case of diphtheria. Children under ten years of age are in much greater danger of contracting diphtheria than are adults. But adults frequently get and spread the disease. Mild cases among adults may cause fatal cases among children. Many persons harbor diphtheria germs in their throat who are not ill with diphtheria but who have been exposed to the disease. These may transmit the disease to others. Convalescent patients may carry the germs for weeks after acute symptoms have subsided.

Do not allow a dog, cat, or other animal to enter the sick room; a pet animal may carry the disease to a child.

Allow no persons to visit the sick room. When leaving the infected house to mingle with others the attendant should bathe the body and hair with some antiseptic soap and disinfect the clothing.

"Remember that soap and water freely, frequently, and faithfully used on the hands is a thousandfold greater bar to infection than a wet sheet before the door." (Chapin.)

Whenever possible, the washing should be done in running water.

The germs are much more likely to be carried in the moist condition, or clinging to objects which have become smeared with mucus, than by means of the air.

The chief method of spreading diphtheria is believed to be through unrecognized mild cases of the disease, especially of the nasal form, in school children.

Food into which the diphtheria contagion has gained entrance should be most carefully avoided. The bacillus of diphtheria is so tenacious of life that it may be carried long distances. Milk has been the means of imparting the disease in many instances.

Abrasions of the skin must be carefully covered with court (or adhesive) plaster, as they afford favorable opportunity for the contraction of diphtheria.

Avoid any exposure of the throat at times when diphtheria prevails. Influences which promote sore throat tend to the spread of the disease.

Use no dish used by the sick. Allow no child to use any dishes, toys, etc., that have been in the sick room.

In epidemics regard all persons having sore throat as probable diphtheria patients. Never kiss such patients; observe all care about allowing children to touch their clothes or dishes. Keep children away from them as much as possible.

Responsible persons should see to it that in times of epidemics individual drinking-cups are supplied to and used by the children in schools. Diphtheria bacilli have been found on cups in actual common use in schools. A fountain-cup would be less liable to spread disease than an ordinary cup, because the water continually overflows the sides and tends to wash away any infection which might otherwise collect on the edges of the cup.

The following rules for preventing contact infection in dealing with infectious diseases in general are posted in all nurses' and employees' rooms in the City Hospital, Providence, and each one is thoroughly impressed with the idea that if he contracts the disease it will be probably due to carelessness about observance of the precautions taught:

To Avoid Taking and Carrying Infection.—Keep fingers, pencils, pins, labels, and everything out of your mouth.

Keep and use your own drinking glass.

Do not kiss a patient.

Wash hands often, and always before eating.

Keep out of doors as much as possible and always sleep with window open.

Do not touch face or head after handling a patient until hands are washed.

Do not allow patient to cough or sneeze in your face.

Do not allow patient to touch your face.

Do not eat anything that patient may wish to give you.

If taking a drink or lunch, be sure and use the nurse's dishes.

Put on gown or change uniform when going into the ward.

On leaving ward always wash hands.

Always remember that infectious diseases are taken and carried by contact and *not* by air infection.

Disinfection.—After death or recovery from diphtheria the room in which there has been a case, whether fatal or not, should, with all its contents, be thoroughly disinfected.

Because of the innumerable ways in which the contagion may be scattered about the house and premises, the entire house and outbuildings, including cellar, garret, woodshed, and privy, will usually need to be disinfected. Especially is this so if the utmost intelligent care to prevent infection has not been used during the illness.

The disinfection must include not only the room, but also all articles, etc., which have been in the room. All clothes and furniture must, therefore, not be removed, but must be left in the room for disinfection.

It is best to burn all articles which are not too valuable, especially if they have been soiled by discharges from the nose or mouth of the patient. This applies particularly to thick, resistant cloths.

All articles which are too valuable to be burned should, if washable, be treated to thorough boiling in some disinfectant solution. This should include all cotton, linen, flannels, blankets, etc. These should be introduced into the solution piece by piece, so as to make certain of thorough wetting, and the boiling should be for at least half an hour.

Heavy clothing, silk, or furs should be hung in the room for fumigation, pockets being turned inside out, and the whole garment thoroughly exposed. Mattresses should be hung up or otherwise placed so as to expose both sides. Carpets are best taken up and laid out on chairs, but may be fumigated on the floor if they are afterward removed to the air and thoroughly beaten. Pillows and upholstered furniture, after being disinfected on the outside. may well be cut open and their contents again exposed to the disinfecting gas.

In no case should disinfection of all clothing, clothes, and bedding be omitted. As already directed, they must be left within the room for this purpose. Infected clothing and bedding have been known to communicate diphtheria months after the case had subsided.

In all of the acutely infectious diseases in which there is a possibility that the germ is carried by the air, the hair of the nurse and any assistants who have been exposed for any length of time to the disease needs thorough cleansing and disinfection. For this purpose tar or ichthyol soaps, or any antiseptic soap that is really antiseptic, can be used. Most disinfectant solutions injure the hair, and many so-called antiseptic soaps are worthless.

The rooms should be prepared for fumigation as follows: All doors, windows, fireplaces, flues, keyholes, speaking-tubes, holes for electric bells, etc., should be securely closed, and sheets or strips of paper pasted over them.

The fumigating agents usually employed are sulphur or formaldehyd, for using which directions have been given in previous studies. The room should be left closed for fully twenty-four hours. After the room has been thoroughly aired out, all furniture, all woodwork, the walls and ceiling, and the floor should be brushed over with a cloth wet with a strong disinfectant solution. The floor should be scrubbed with soap and hot water. The walls should be painted over, or coated over with two coatings of whitewash. Finally the room should be again left open to air and become thoroughly dry. These rules for disinfection will apply to any of the most acutely infectious diseases.

The value of fumigation and the methods of disinfection in general after such diseases are subjects on which much difference of opinion exists. Much less reliance is placed on fumigation than was the case a decade ago, and much more emphasis is being placed on soap and water, and the careful observance of rules to avoid carrying infection contained on page 40.

It is well to remember that in this, as in many other forms of germ disease, sunlight is an invaluable aid to all other methods of disinfection. Neither diphtheria nor scarlet fever germs can long retain their vitality when exposed to the direct rays of the sun.

SCARLET FEVER

Scarlet fever occurs at all seasons, but most frequently in the autumn. Its characteristic features are a diffuse eruption and sore throat. It usually begins with chills and vomiting. It may be communicated throughout the whole course of the fever, and is particularly to be guarded against during desquamation. Even after desquamation is complete the poison may be conveyed to another, and it clings tenaciously to clothing and furniture. More attention is being given than formerly to the prevention of infection through mucus from the mouth and nose.

General Characteristics.—A simple inflammation of the throat exists in all cases. In severe cases the glands may suppurate, and even gangrene of the tissues of the neck has occurred. A catarrhal condition of the gastro-intestinal tract is not uncommon. The spleen is frequently enlarged. The period of incubation varies from one day to ten. The onset is abrupt as a rule. Fever may reach 105°F. the first day.

Usually after the second day the eruption appears, first on the neck and chest, and gradually spreading over the whole body. Even the mucous membranes of the mouth and tonsils may be invaded. The skin feels swollen and tense. Itching is variable. Gradually the rash disappears and the separation of the cuticle begins. The entire process of desquamation requires usually from ten to twenty days.

Malignant types of the disease are sometimes met with, in which the patient may at the onset be overwhelmed with the intensity of the specific poison and die in a condition of coma inside of twenty-four hours. Another malignant type is the hemorrhagic form—hemorrhage into the skin, hematuria, and epistaxis all may occur. This form is more frequently observed in delicate children. Death may occur on the second or third day. In another form extensive involvement of the tissues of the throat may occur. Membranous exudation may extend from the fauces and tonsils forward into the mouth or upward into the nostrils, occasionally into the trachea and bronchi. Death may take place rapidly from toxemia, or may result from hemorrhage due to the separation of sloughs about the tonsils, in which an artery is ruptured.

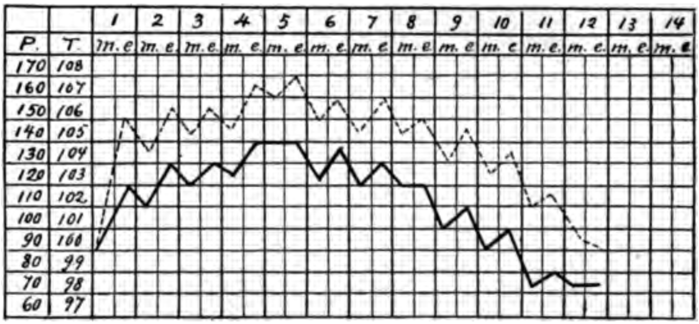

FIG. 10.—Pulse (——) and temperature (------) of a simple uncomplicated scarlet fever. The acme in this case was reached somewhat late; the defervescence is rather marked (Kerr).

Complications.—Nephritis may occur during the mildest attack. When it develops it is usually in the second or third

ond day (Hecker, Trumpp, an

week. In very severe cases convulsions occur, and the child dies of acute uremia. Arthritis may occur late in the fever. Where a single joint is involved, suppuration is not infrequent. Cardiac complications are often found where arthritis is present, but may occur independently of any other complication. Pleurisy and pneumonia sometimes occur during convalescence. Among the most serious and frequent complications is otitis media, due to an extension of inflammation from the throat through the Eustachian tubes. Suppuration and perforation of the drum may occur, producing chronic deafness in many cases. The mastoid cells may be involved and mastoid abscess result. Various nervous complications may occur. Chorea is not infrequent, or sudden convulsions followed by hemiplegia. Occasionally cervical adenitis results. Grave symptoms are continued high fever, early mental and nervous disturbances and restlessness, cutaneous or visceral hemorrhages, severe membranous angina, with cervical bubo, and indications of obstruction of the larynx; and nephritis, causing suppression of urine.

Management.—The disease cannot be aborted. Good nursing is extremely important to avoid complications. Milk diet is recommended as a preventive of nephritis. An equable temperature and thorough ventilation are required. A warm sponge bath may be given each day, and water freely internally. After desquamation begins the skin should be rubbed daily with carbolized vaselin or olive oil. When fever is high or pronounced delirium occurs the cold pack is sometimes used. The throat and mouth should receive careful attention. Throat symptoms are treated as they arise. Nephritis and cardiac weakness are to be guarded against in convalescence. Hot baths are strongly recommended.[1]

Elimination.—It has been found that the promotion of free elimination, by way of kidneys and bowels in the early stages, is usually helpful or effectual in preventing serious cardiac and renal complications. Kidney complications are very apt to occur during convalescence.

Antistreptococcic serum has been used with some success.

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[1] Rover, in "Colorado Medicine."

with chills every third day; another, the quartan, with chills every fourth day; another, the quotidian, with a daily paroxysm; and, another, the irregular autumnal malarial fever, with an irregular febrile course.

It is primarily a blood infection. The organisms are found in the blood, spleen, and other organs of the body. In certain malignant types of the disease, characterized by congestive chills, the parasites are found in large quantities in the capillaries of the brain, liver, spleen, and other organs. The infection is conveyed from the sick to the well by means of a certain variety of mosquito known as anopheles. Malaria has been called the pioneer's disease, and has proved an obstacle to civilization and a barrier to settlement in almost every quarter of the world.

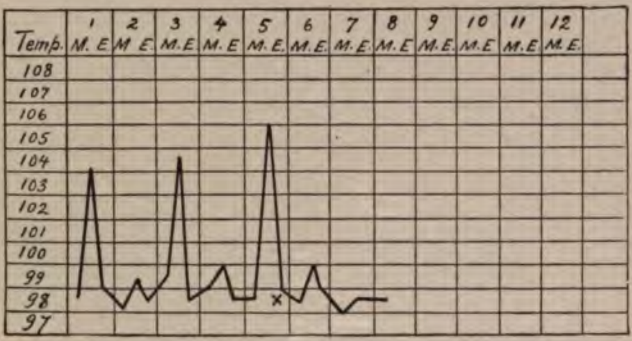

FIG. 11.—Tertian type of malarial fever. Male child of six years. Quinin begun at *X* (Kerr).

The period of incubation is not yet accurately determined. It varies in proportion to the amount of infectious material absorbed. It may range from a half to fifteen days. Occasionally patients have attacks months after removal from a malarial district.

In regular remittent fevers, chills, fever, and sweating follow in regular order. Delirium, jaundice, furred tongue, and spleen enlargement may all be present. As a rule, intestinal symptoms are not seen. In many cases only a blood examination will distinguish between the malarial and typhoid infection. The Widal reaction is valuable in diagnosis. In certain pernicious types of the disease the patient assumes a comatose condition, in which acute cerebral symptoms are noted from the beginning. It is said this form is due to the localization of infectious matter in the brain, which produces marked changes in brain tissue. The asthenic form is characterized by acute gastro-intestinal symptoms and extreme prostration. Temperature may be subnormal.

Prophylaxis consists in the extermination of the mosquito. In malarial regions it has been found that the protection of houses and particularly sleeping rooms with suitable screens, and keeping the inhabitants indoors from before sundown until several hours after, have been sufficient to secure immunity so long as precautions are strictly observed. Entomologists have found that but 4 or 5 per cent. of the mosquito family are capable of carrying malaria, and that the anopheles' working day begins in the early evening and lasts but a few hours. This knowledge has proved invaluable to explorers, railroad builders, and campers in malarial regions.

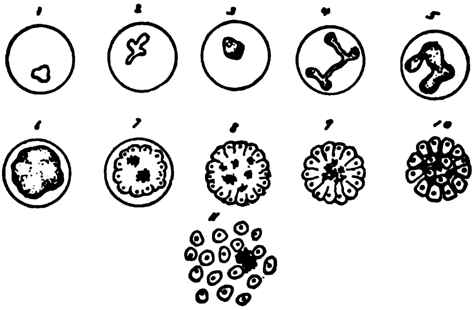

FIG. 12.—Some of the principal forms assumed by the plasmodium of tertian fever in the course of its cycle of development (after Thayer and Hewetson).

Other facts which investigation has brought to light are that mosquitoes require stagnant water or swampy ground for their development, and that they will not develop freely in water to which fish have free access.

"It has long been known that the breeding place of mosquitoes was in water; that their eggs when deposited in water floated upon the surface, usually glued together into a raft; that they then turned into larvæ, of which the well-known 'wigglers' in the rain barrel are familiar examples; and that they finally hatched into the complete insect and rose into the air." (Woods Hutchinson, M. D.) It was found that the application of oil to the stagnant pool formed a scum on the surface of the water and prevented the development of the larvæ.

In nursing malarial patients put the patient between blankets during a chill and surround with hot-water bottles. A hot-water bag over the heart is sometimes ordered. Give hot drinks unless the patient is nauseated. Sponging and cold compresses may be required, as in other diseases in which fever is high. Such patients should be kept screened against mosquitoes.

TYPHUS FEVER

Typhus fever also known as camp-fever and ship-fever, has been termed "a filth-disease" because its continuous persistence has occurred only where bad sanitary conditions prevailed. Its prevalence in war times, when it has swept through sections of country like a tornado, has been attributed to the fact that in war, conditions are disorganized; people are obliged to neglect ordinary rules of cleanliness, and to live in ways that make the spread of the disease difficult to control.

Causes.—The disease is caused by a germ (the Bacillus typhi-exanthematici). The germs are carried chiefly by lice —particularly body lice which travel from the sick to the well. Sleeping places for migratory individuals (vagrants and homeless people) are places in America where special preventive measures are always needed.

The incubation period is from one to two weeks. A few days before the acute symptoms are manifested, there may be headache, lassitude, dizziness, loss of appetite, thirst, chilliness alternating with increased body heat, and muscular pains.

Ambulant cases in which the attack is light are sometimes seen and these constitute a serious danger to all with whom they come into contact.

The Onset.[1]—"The onset itself occurs rather suddenly, with a marked chill, the temperature thereupon rapidly rising to 40°C. (104°F.) or higher; occasionally there is vomiting. Within a few days, a strong feeling of sickness develops, together with depression, extreme weakness, and increased pain in the head, sacrum and limbs; the fever rising, with an almost constant temperature at around 40°C. (104°F.) or more, abating but slightly during early morning.

"Simultaneously, nervous disturbances are evidenced, these consisting in an excruciating headache, flickering before the eyes, noises in the ears, and, in severe attacks, perturbed consciousness that rapidly passes into complete loss of consciousness and then delirium. The face glows, the skin feels hot, the tongue is dry and thickly coated. Frequently, also, catarrhal conditions develop; signs of an extensive bronchitis make their appearance, while catarrh of the nose and conjunctiva may complicate the picture. Almost always there is swelling of the spleen.

"Between the third and fifth days, numerous slightly elevated diffuse pale roseola-like spots, some of the size of lentils, break out over the trunk, limbs, and sometimes the face, these at first showing a purely hyperemic character and occasionally greatly resembling the eruption of measles. In severe attacks these lesions will assume a bluish discoloration or, in consequence of hemic extravasation, they may become petechial.

"In the milder forms, as a rule, the fever diminishes and the general condition improves during the course of the second week; while, on the other hand, if of severe type, all the symptoms increase in severity. Under these circumstances, in the presence of a very high fever, the status typhosus becomes fully developed. The mind becomes more obscured; the patient, with face deep red, lies indifferent, mouth and eyes half open, tongue parched, and utterly prostrate and exhausted. Sometimes, however, he may exhibit considerable nervous unrest and even a tendency to leave the bed. The voice assumes a hoarse tone. Owing to the weakened heart, hypostatic indurations form in the dependent portions of the lung. These conditions may terminate in death."

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[1] Münchener Medizinische Wochenschrift (1914, page 2431).

Preventive measures include a thorough steam sterilization of clothing and a disinfectant bath for all who have been exposed to the disease, with all possible precautions used, against the lice which carry the disease. Nurses working in the hospitals in the 1915 epidemic in Europe wore a one-piece garment—stockings included; they wore high boots, rubber gloves and a protective cap for the hair.

A protective vaccine prepared by Dr. Harry Plotz of New York—the discoverer of the typhus germ—is being used, but its efficacy is not yet fully proven.

CHAPTER IV

ACUTE COMMUNICABLE DISEASES (Continued)

CEREBROSPINAL FEVER—SPOTTED FEVER

Cerebrospinal fever (spotted fever) is caused by a specific organism (the diplococcus intracellularis meningitidis) and characterized by inflammation of the cerebrospinal meninges. It sometimes occurs in epidemics, usually in the winter or spring. The period of incubation is unknown.

General Characteristics.—The onset is usually sudden, with severe chills, headache, fever, and vomiting. Stiffness and pain in the muscles of the neck are among the important characteristic symptoms early in the disease. Later the muscles contract, drawing the head back. Photophobia and extreme sensitiveness to sounds increase. Severe pains are felt in the back and limbs. Tonic or clonic spasms may occur in the arms or legs, also spasms of the facial muscles, and even facial paralysis. Frequently there is great rigidity of the muscles of the back, or the whole body may become stiff. Marked hyperesthesia along the spine is common. Fever is variable. Delirium of the active, violent type may occur, and as the disease progresses gives place to stupor and coma.

Certain cutaneous symptoms are important. There is a petechial rash sometimes, but not always. This has given the disease the name of spotted fever. Purple spots, erythema, urticaria, or a hyperemic rash, not unlike the typhoid rash, may be present. A malignant type of the disease of an apoplectic character sometimes occurs, which may prove fatal in twenty-four hours. Pleurisy, pneumonia, pericarditis, and parotitis occasionally develop as complications. Certain types of typhoid fever and pneumonia closely resemble cerebrospinal meningitis. The marked symptoms of value in the diagnosis are severe headache, retraction of the neck, rigidity of the muscles, tremor, and the spinal symptoms, with fever.

Lumbar puncture is resorted to for therapeutic purposes and in some doubtful cases for diagnosis. Either a local or general anesthetic may be used. The patient is placed on the right side, with the left shoulder well forward and the knees drawn up. A small aspirator needle or antitoxin syringe needle is used and inserted in an upward-inward direction on one side of the medial line into the spinal cord, and a portion of fluid obtained. Cover-glass preparations of this are then made, and the character of the contained organism examined microscopically.

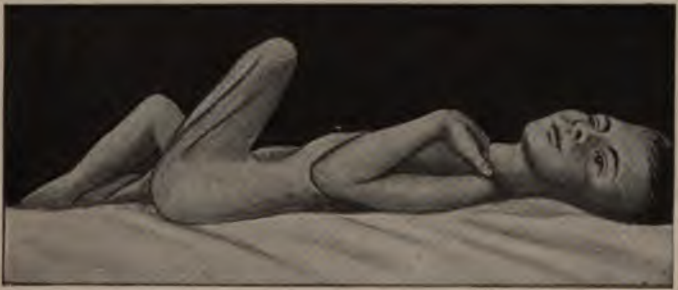

Fig. 13.—Cerebrospinal meningitis: Tâche cérébrale shown on left thigh (Ruhräh).

Treatment thus far has been experimental and not very successful. The mortality is very high. Cold to the head and spine, full tub baths, with sedatives to control the spasms, are usually tried. The Flexner serum has given good results, and gives promise of greatly reducing the mortality. Forced alimentation by means of a stomach-tube occasionally has to be resorted to. The precise method by which infection is conveyed is unknown. Some claim the mucous membrane of the nose is the channel of entrance. The microörganism is found in the cells of the inflammatory exudate, and is destroyed readily by weak disinfectants. Because of the very great fatality which has attended the disease it is advised to practise isolation, thorough [illegible] f excreta and clothing while the disease is in [illegible] umigation of room and furnishings with formal [illegible] termination.

INFA [illegible] YSIS

Infantile paralysis ([illegible] litis) is defined as an acute infectious disease [illegible] microörganism which gains access to the cerebrospinal chambers by way of the mucous membranes of the nose and throat.

Epidemics of this disease have been frequent in recent years. In New York in 1907, 2500 cases were reported. The inflammatory changes produced by the disease cause a crowding of and subsequent destruction of certain nerve-cells if the pressure is not relieved promptly. The "destruction of the cell means loss of function in the nerve and a paralysis of the muscle that depends on that nerve for its nerve impulses." (E. A. Rich, M. D.) The epidemics occur, as a rule, during the summer and early fall.

There are several types of the disease, each type producing characteristic symptoms, depending upon the region chiefly involved.

Among the early symptoms are moderate fever, more or less rigidity of the spine and neck, intense headache, nausea, and vomiting. Constipation is invariable and retention of urine frequent. In certain forms of the disease there is marked hyperesthesia and severe pain in the extremities, so that the slightest movement, jarring of the bed, or moving of the bedclothing produces extreme suffering.

Stages.—There are recognized three distinct stages in infantile paralysis—acute, subacute, and the chronic stage.

Management.—In no condition or disease is absolute quietness and rest more important than in the acute or first stage of this disease. Eminent authorities[1] are quoted as insisting that "any further disturbance of the brain and spinal centers in the acute stage, any expenditure of inherent energy, prevents nature from doing her work of removing the inflammatory condition which was causing pressure on the nerve-cell. . . . The less trauma that comes from the outside, the less repair will be needed within, and the less resulting paralysis." Not a voluntary motion should be allowed in the acute stage. Sand-bags beside head and body, restraining sheets or jackets in children, and constant watchfulness are needed. In some cases plaster of Paris is employed to restrict motion in the acute stage. It is stated that allowing a child to toss about in his fever and delirium when all the body forces were needed to repair the vital part is responsible for a large proportion of the cases of serious paralysis.

In addition, cold compresses, cold sponging, counter-irritation over the lumbar spine, and lumbar puncture for relief of pressure symptoms are all used with good results. Hot wet packs to stimulate the skin and relieve the hyperesthesia have proved useful. After the acute stage the treatment is usually directed to preventing the affected limb or part from wasting, and helping the nerves to regain function. Patience and constancy are especially necessary in carrying out the treatment.

Light and *heat* from an electric cabinet, combined with massage, are chiefly relied on. The treatments need to be continued, as a rule, for two years, usually every second day.

"The masseuse must be especially taught what muscles are, and what antagonistic muscles must be well stretched to prevent contraction, and thereby give the weakened muscles a chance to regain their tone. . . . Passive movements, assisted active movements, and resisted active movements in turn also help materially. During the acute stages the attending physician and nurse should see to it that the limbs are held straight, not in positions likely to produce contractures." (R. Tunstall Taylor, M. D.)

Proper braces and shoes to meet the requirements of the individual case are needed in the later stages. Expert ortho-

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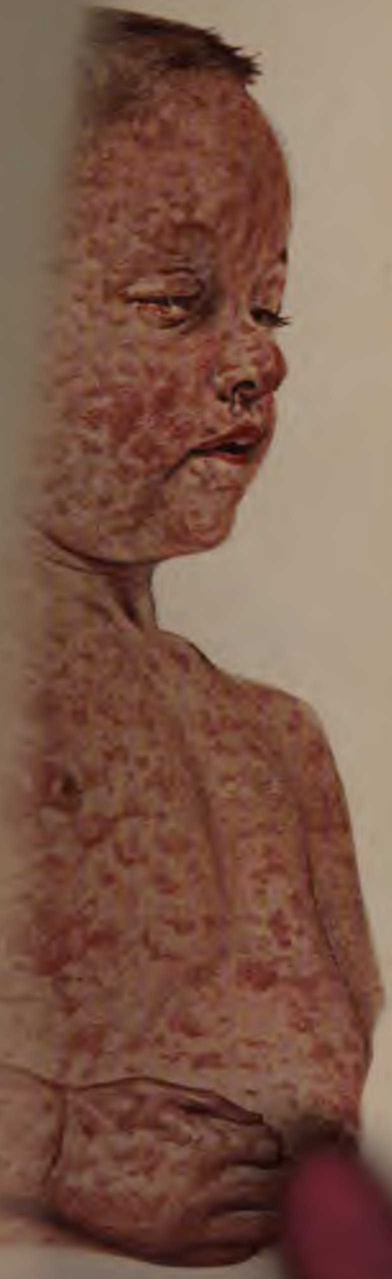
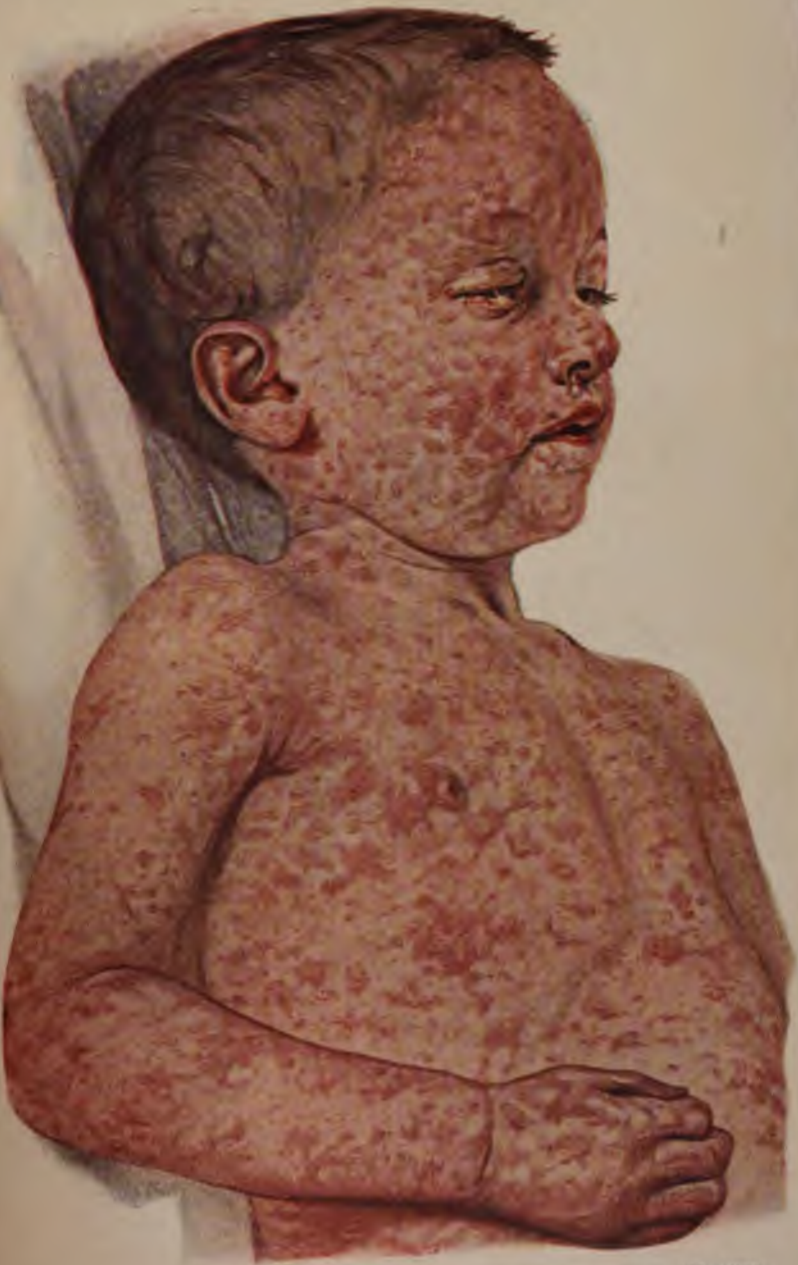
[1] Lovett and Richardson.



after its first appearance (Hecker,
and Abt).



The eruption of measles two days after its first appearance (Hecker, Trumpp, and Abt).

pedic treatment does much to prevent and correct the deformity resulting from this disease.

The nurse's chief responsibility comes in the acute stage. Her efforts should be directed not to "keeping busy," as in many other cases, but to reducing the disturbing influences from the outside to the minimum and preventing unnecessary internal excitement in any part of the system. Many ordinary nursing duties will need to be omitted in the effort to secure rest for the sufferer.

The usual measures of isolation and disinfection apply in this as in other communicable diseases.

MEASLES

Measles (rubeola) is an acute, highly contagious disorder characterized by an initial coryza and a spreading eruption.

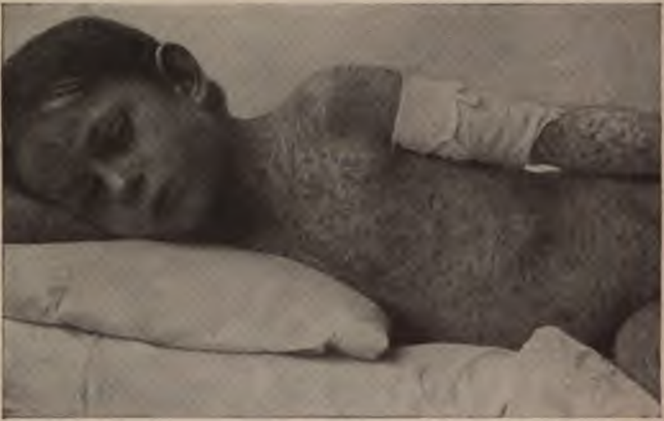
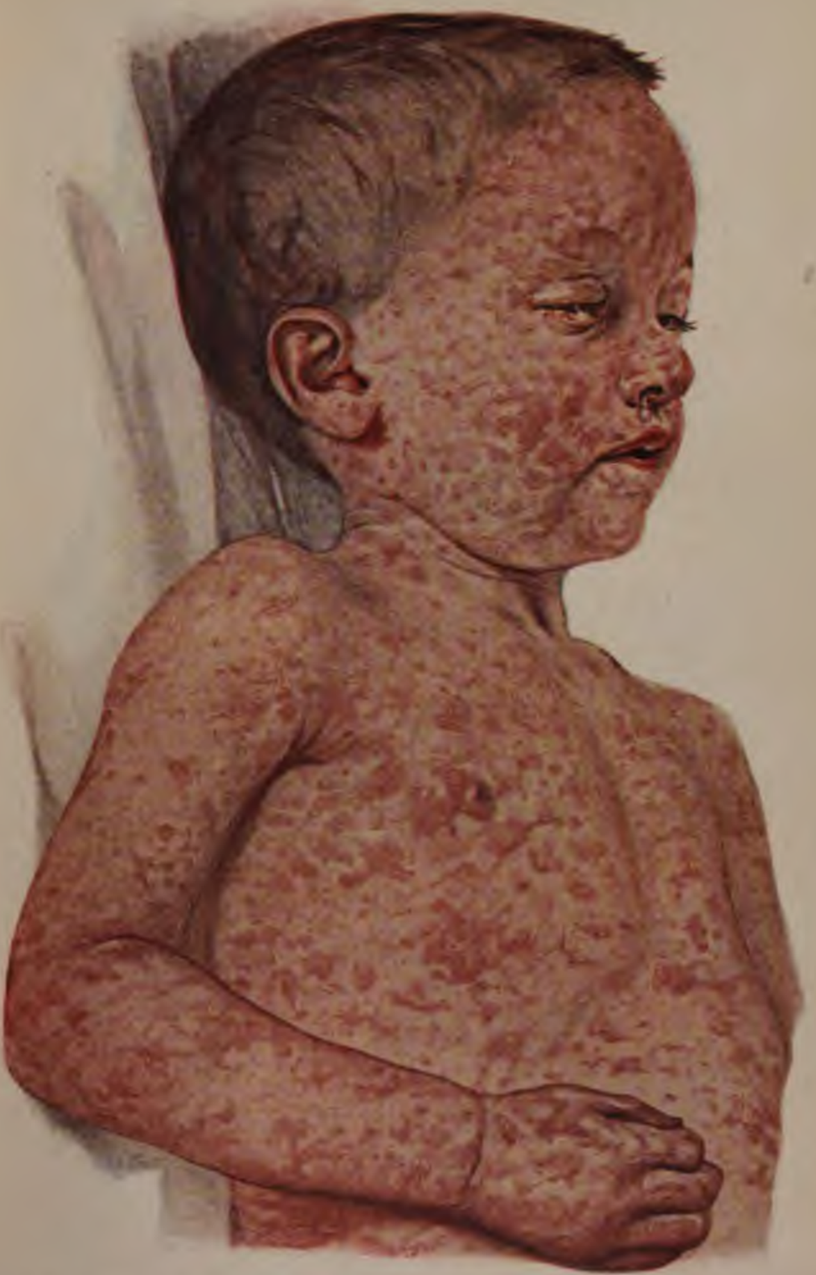


FIG. 14.—Measles exanthem on the third day of the eruption (Welch and Schamberg).

The exact germ that acts as the infective agent has not yet been isolated, but there is no doubt as to the infectious nature of the disease. It is probably the most frequent and most highly contagious of all the infectious fevers.

It occurs usually in cold weather. Infants under one year are rarely attacked. It is believed that the contagion is



The eruption of measles two days after its first appearance (Hecker, Trumpp, and Abt).

communicated by the breath and the secretions from the nose and throat.

Incubation.—This period may be from seven to eighteen days. Some authorities say "fourteen days most frequently." The germ has little vitality as compared to scarlet fever. Second attacks rarely occur.

Symptoms.—The earliest symptoms are those of a heavy cold, fever, sneezing, hoarseness, cough, and general drowsiness. In many mild cases these symptoms are not sufficient to attract much attention, and the rash may be the first pronounced symptom noticed. The rash begins to disappear usually by the fifth or sixth day, but in many cases it is very slow in fading.

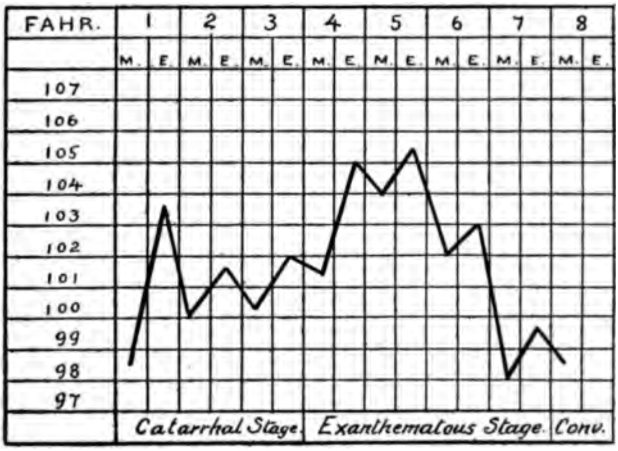


FIG. 15.—Temperature chart of rubeola of moderate severity in a child of four and one-half years (Kerr).

In measles and other mild communicable diseases no physician is employed in many cases. Visiting nurses and others knowing of the existence of such diseases should see that the health authorities are notified.

Management.—The idea is gradually dying out that measles and whooping-cough, and other infectious ailments with which children are commonly attacked, are inevitable experiences which every child must go through with as surely as it goes through the teething period. Regarding this point Dr. L. Baum[1] says, "No one who has witnessed the ravages of a virulent epidemic with high mortality and severe complications, and their far-reaching influence upon the future of the patients, [illegible] ment question the advisability of protecting [illegible] much as possible, both by compulsory isolatio [illegible] dual attacked and such regulations as tend to li [illegible] of the disease."

The rooms should b [illegible] ed, and if possible the air kept moist, owing [illegible] ty to irritation of the respiratory organs. T [illegible] s to be excluded (or almost so), because the [illegible] ed.

As a rule, no special treatment for the fever is needed. Gargles and sprays for the throat and nose are usually not required in mild cases. The diet while the fever lasts is usually liquid, semisolid, or very light. Rest in bed is imperative. A warm bath every day may be given. Warm drinks and hot baths will help to hasten the coming out of the rash. An oil rub daily is often prescribed. Convalescence is the most important period in the disease.

Complications.—The most frequent and most dreaded complication is bronchopneumonia. The death rate from measles alone is not high, but the pulmonary complications render it one of the most serious of the diseases of children. It ranks third in mortality among the eruptive diseases. Whooping-cough frequently follows measles, and tuberculosis is another sequel to be feared in certain cases.

GERMAN MEASLES

German measles (rubella, also known as rötheln) is a disease as distinct from measles as measles is from scarlet fever. While comparatively few individuals have a second attack of measles, a considerable number have measles and German measles at different stages in life. The disease resembles both scarlet fever and measles in many respects. The contagion is communicated in the same way as in measles, and the general management is practically the same.

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[1] "Clinical Therapeutics." Croftan.

WHOOPING-COUGH

Whooping-cough (pertussis) is a communicable disease caused, it is thought, by the Bacillus convulsivæ. The stage of incubation lasts from two to seven days. It usually occurs in children between six months and five years. More than half the cases are in infants under two years of age.

The period of incubation is from one to two weeks. Second attacks are most unusual. It is believed to be spread by direct contact and from but a short exposure. The patient is to be regarded as a source of infection until he is well and especially so as long as the spasmodic cough continues.

The disease is characterized by a bronchial catarrh, with a teasing cough, which, as it progresses, becomes convulsive, occurring in paroxysms. The spasms occur as the result of the effort to free the trachea of mucus. These spasms may be induced by changes of temperature, sneezing, anger, laughing, or violent movements of the body. During the paroxysms the face and hands grow livid. The spasm of the glottis restricts the passage of air to the lungs, cutting off temporarily the supply of oxygen. The straining is sometimes so great that hemorrhage from the eyes and nose, involuntary passage of urine and feces, and even hernia or prolapse of the rectum have been known to occur.

Complications.—Gastroduodenal catarrh, arising from the swallowing of the slimy mucus and frequent vomiting, is one of the most dangerous complications of whooping-cough. Hyperemia of the brain caused by the strain of coughing sometimes results in convulsions and coma. Bronchial and pulmonary affections are greatly to be dreaded. The disease is classed in England third among the fatal diseases of children. It is said that it annually furnishes over 2 per cent. of the total mortality of the United States. The child does not die from infection, but from the resultant pathologic changes affected by and conditions set up through its attack. These are largely of congestive character, bringing about, through interference with respiration and disturbances of digestion, extreme debility and greatly lowered vitality.

Management.—The superiority of any one form of treatment over others in whooping-cough has never been fully established. Belladonna, heroin, bromoform, chloral hydrate, opium, phenacetin, carbonate of potash, and numerous other drugs have all been used, and all have their advocates. The Pasteur Institute, Paris, has experimented considerably with a solution in which whooping-cough bacilli had been dissolved. The injection of this solution resulted in shortening the attack to less than three weeks.

A remedy which at present seems to promise some relief is a 3 per cent. aqueous solution of fluoroform given internally. Inhalations of medicated steam are strongly recommended by many of the specialists in children's diseases. Carbolic acid, formaldehyd, creosote, and creolin are often used in this way. This form of treatment has the advantage that it can be kept up day and night and no disturbance of the stomach or other organs is produced by it. Antipyrin has been successfully used in a recent epidemic, both internally, and locally in a 4 per cent. spray. It needs to be used with extreme caution because of its depressing effects, but it is said to have some effect in lessening the number and severity of the spasms. A change of air has often produced marked beneficial effects in the later stages of the disease. An elastic abdominal belt has been used in dealing with this disease, and is believed to have had some effect in lessening the spasms.

The important thing is to nurse the patient, not the disease, and do the best possible to keep the invalid in condition to overcome the organism and come through without damage to himself. The fresh-air treatment, keeping the patient out of doors as much as possible and having the sleeping-room at night well filled with good air, are recommended by many of the best authorities, though in the case of weak, debilitated children it needs to be used with caution, especially in winter. Experience has shown that the systematic practice of washing the face and hands and putting on fresh clean clothing every night and morning, even though the clothing appears unsoiled, has a beneficial effect in lessening the coughing spasms. The clothing quickly becomes infected with the germs from the mouth and nasal discharges; the germs are again inhaled to add to the severity of the disease. Re-infection in this manner is believed to greatly influence the duration of the attack.

An important part of the nurse's duties is to impress the mother with the necessity of frequent changing of the child's clothing and of rigid cleanliness and the purest air possible night and day. Many mothers are firm believers in drug-shop remedies and consider such rigid cleanliness of no value, if not positively dangerous. When the mother is convinced that re-infection is possible, and that it always prolongs the disease, her coöperation can usually be secured.

Hot baths have been given toward evening with good results. The method recommended is as follows: The water should be about 99°F. and the child should stay in the bath from ten to fifteen minutes, the head being kept cool with a hot-water compress. The children sleep well after it, and the number and severity of the paroxysms seem much diminished. Attention is called to the skin of children thus afflicted, which, it is said, is usually pale and cool, indicating contraction of the vessels in the skin. The hot bath counteracts this and thus relieves the internal organs, promotes elimination of toxins, and soothes the nervous system and the tendency to the paroxysms.

Nourishment is of primary importance. The patient's strength must be sustained if he is to fight a winning battle. Individual tastes and peculiarities here may need special consideration.

All possible means should be used to prevent children who have whooping-cough from mingling with others, and also to guard children against possible exposure to the infection.

MUMPS

Mumps (epidemic parotitis) is "an acute infectious disease characterized by fever and by swelling and tenderness of the salivary glands, usually of the parotids, but sometimes of the submaxillary and sublingual. Metastases occasionally occur in other organs." (Ruhräh.)

The period of incubation is long, usually from two to three weeks. Infection is said to be by direct contact. Most cases occur between five and fifteen years though adults occasionally prove susceptible.

Complications.—Orchitis may occur in boys. This develops usually when the swelling is subsiding in the parotid glands and may occur after swelling has disappeared. Atrophy of the testicles sometimes follows. Ovaritis and vulvovaginitis occurs occasionally in girls and mastitis may develop in either sex.

Otitis media, meningitis, arthritis and albuminuria have occurred during or following the attack.

Management.—Isolation, rest in bed, liquid diet and hot or cold applications for the relief of pain, are usual measures. Acid foods of all kinds should be avoided, also highly seasoned foods. Various ointments are applied for the relief of swelling and anodynes are often needed. In orchitis the gland is suspended and lead and opium compresses are sometimes applied.

SMALL-POX

Small-pox (variola) is a highly communicable febrile disease marked by an eruption which passes through four stages —papular, vesicular, pustular, and crust. It may attack persons of any age—has attacked the fetus *in utero*, the child having been born with the rash well developed or the scars. It is generally believed that the respiratory system is the channel of entrance to the body. The virus is reproduced in the pustules, and is found in secretions, excretions, and exhalations from the skin and lungs. The period of incubation is about twelve days, though cases have occurred in which the disease manifested itself in five days from the time of exposure.

General Characteristics.—Three varieties of the disease are recognized—variola vera, variola hemorrhagica, and varioloid. The stage of invasion is often ushered in with a chill in adults and convulsions in children. Headache, fever, vomiting, and severe lumbar pains are common initial symptoms. The rash appears in about three days—first on the face, in the form of little hard pimples, which feel like pieces of shot in the skin. Within twenty-four hours they spread to other parts of the body, when the temperature may be expected to fall and the severe initial symptoms subside. These papules about the fourth day undergo a change. A watery fluid is contained in them, which in a few days becomes purulent. In this stage, the pustular stage, the temperature again rises (secondary fever). The area around the pustules becomes inflamed. In the discrete form of the disease the pustules remain separate and rapidly dry, and by the end of two weeks desquamation may be expected to begin. In some cases the contents of the pustules coalesce, the inflammation and swelling is great, and the face appears as a great superficial abscess. These are the very severe cases. The hemorrhagic form sometimes follows the confluent variety. Hemorrhage into the skin or the conjunctiva and from the mucous membranes, hemoptysis, and hematuria occur. Death may result before the appearance of the rash, or within a few days after the hemorrhages take place.

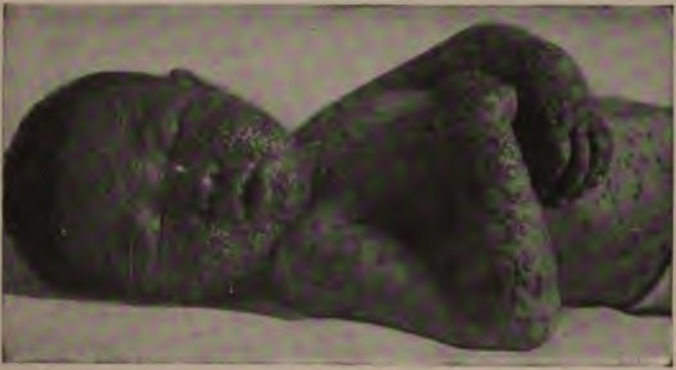


FIG. 16.—Small-pox on the seventh day, fatal case (Welch and Schamberg).

Management.—Strict isolation is the rule. The fever is combated by cold sponging or cold baths. Nourishment must be given whether or not the patient rebels against it. Milk, hot or cold, ice cream, egg-nog, and kumyss are recommended during the height of the disease.

Various antiseptics and oils for local applications have been tried, but no means of preventing the formation of pustules have yet been discovered. Water with menthol is sometimes used to allay itching. When the pustules begin to break frequent changing of sheets is necessary. Patients must be warned not to scratch the face.

In the desiccation or drying stage warm antiseptic baths are used, carbolic acid, corrosive sublimate, and permanganate of potassium being favorites. In this stage nourishment needs to be given freely.

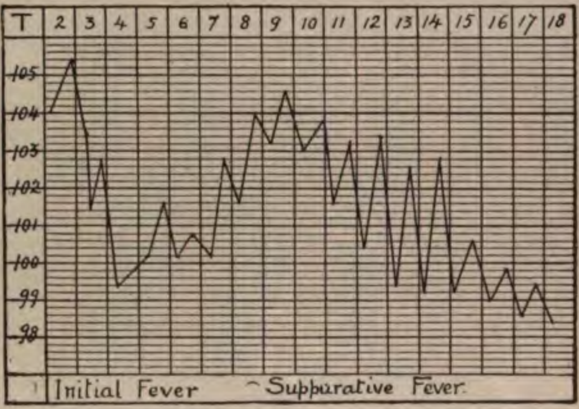
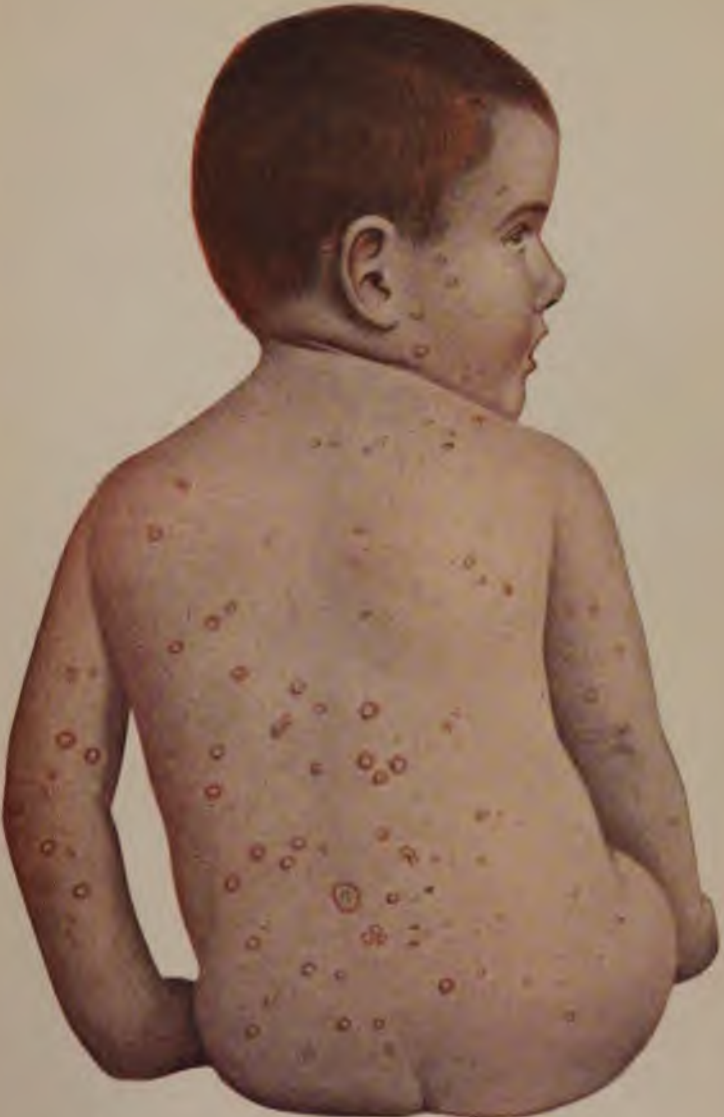


FIG. 17.—Temperature chart of small-pox (Register).

Complications.—Erysipelas, gangrene, boils, abscesses, bronchial affections, pneumonia, pleurisy, and nephritis all sometimes occur as complications, and need to be guarded against as far as possible.

The disease is preventable by vaccination. It cannot be cut short by any known medicines. Intelligent nursing and palliative supporting treatment are the best means available.



Varicella or chicken-pox is an acute contagious disease occurring in children. One attack usually protects for life. Causative agent is supposed to enter through the air-passages. The eruption of varicella on the fourth day (Hecker, Trumpp, and Abt).

YELLOW FEVER

Yellow fever is an acute affection, the marked features of which are congestion, vomiting, jaundice, albuminuria, toxemia, and a decided tendency to hemorrhage from the stomach. The vomited matter is very dark in color, almost black—the so-called "black vomit." The disease is not communicable, as small-pox or scarlet fever, neither is it believed to be spread by means of water or food. A certain mosquito, known as stegomyia fasciata, is responsible for the transmission of the disease. This insect breeds in water, not necessarily putrid. In many respects yellow fever resembles the severer forms of malarial fever. The period of incubation is from two to five days.

General Features.—The onset occurs without premonitory symptoms, usually in the early morning. The common febrile symptoms are present, with sore throat. Severe vomiting, as a rule, does not begin until the second or third day. It is said that the early appearance of jaundice is one of the most characteristic symptoms of the disease. The fever may rise to 106°F. the first day. Defervescence by lysis may be expected in mild cases within two or three days. A secondary fever occurs which may continue for a few days. In fatal cases the secondary fever continues high, while the pulse may slow to 40 or even 30. Albuminuria is constantly present in yellow fever. The jaundice becomes deeper during the secondary fever, and black vomit is a feature of the third stage. Abscesses, parotitis, and diarrhea may occur as complications of the convalescent period. The disease is never spread by clothing. One attack confers immunity.

Treatment, as a rule, is symptomatic. Colonic irrigation and subcutaneous injections of saline solution are often given to combat the toxemia, and ergot and acetate of lead to check hemorrhage. A temperature of 104°F. in the first two days is a grave symptom, also black vomit, though the latter is not necessarily a fatal sign. Where suppression of urine, delirium, coma, and convulsions occur the cases rarely recover.

THE CONVALESCENT PERIOD

In convalescence after many of the acute infectious fevers the nurse's culinary powers are tested.

The length of time required for the digestive organs to recuperate varies with different persons, and this is a case in which it is wise to n [illegible] vly. Cream may enter more largely into the [illegible] with some of the finer starchy foods. The fir [illegible] dministered after acute fevers should be given [illegible] finely separated, as in scraped beef or chicke [illegible] served alone or with a cream dressing. Wher [illegible] ot produced any ulceration of the alimentary [illegible] nay be somewhat more liberal in convalescence [illegible] h lesions are present.

A *dietary* for a patient convalescing from pneumonia, malaria, or some other acute febrile affection without gastric or intestinal lesion, dating from the first day in which fever has been entirely absent, might be arranged as follows:

First day: Breakfast, milk toast, soft-boiled egg, coffee; lunch, junket; midday meal, oyster stew with crackers, weak tea; lunch, equal parts of chicken broth and milk, with small piece of bread; supper, farina with cream, orange jelly.

Second day: Breakfast, well-cooked rice, cocoa, toast; lunch, cup of baked custard; dinner, potato purée, crackers, snow pudding, weak tea; lunch, cup of milk, coffee, with scraped beef sandwich; supper, cream of wheat, prune whip.

Third day: Breakfast, poached egg on toast, coffee; lunch, cup of bouillon, with croutons; dinner, creamed chicken, crackers, ice cream; lunch, lemon jelly, with triangle of thin bread and butter; supper, baked potato, cocoa, wafers, orange sponge.

Fourth day: Breakfast, baked apple, well-cooked oatmeal, buttered toast, coffee; lunch, junket, social tea crackers; dinner, broiled steak, bread and butter, riced potato, charlotte russe, weak tea; lunch, cup of cocoa, thin bread and butter; supper, celery bisque, crackers, arrowroot.

Following this, if no digestive disturbance is noticed, the diet may be gradually increased, choosing for the first week the most nutritious and easily digested foods.

Occupation or amusement during this period is often of great importance. Many a nurse who was a genuine heroine during the acute stage of the disease has been a conspicuous failure in her management of convalescence. The ability to read aloud well is an art well worth cultivating. Some lessons in elocution are worth while for most nurses, for few read so well that improvement is not desirable or possible. Ways and means of diverting the attention must be sought and found. The nurse's mental and personal influence count for much. The slow progress may be discouraging, but the patient must be buoyed up and led to an active belief in a happy issue out of all his troubles.

The *nurse's duty,* when calls to cases of highly communicable diseases are concerned, is a question that must be settled in some way. The Golden Rule is a pretty fair guide in such cases. The nurse who declines such cases through cowardice is unworthy of a place in the ranks of nurses. He is a poor soldier who offers to enlist and fight only until real danger presents itself. There are conditions where a refusal to accept such cases is justifiable, but only in rare cases does fear of her own safety constitute a sound, worthy reason for such refusals.

CHAPTER V

DISEASES OF THE RESPIRATORY SYSTEM

THE study of this chapter should be preceded by a review of the anatomy and physiology of the respiratory system.

Methods of Examination.—In diagnosing diseases of the respiratory organs various methods are used. The nurse is not expected to make such examinations, but she is required to assist the physician, and should understand something of the methods. She should also train herself and be trained to detect changes in the character of respiration. The stethoscope and the laryngoscope are important aids in examining these organs. The common methods of examination are inspection, palpation, mensuration, succussion, percussion, and auscultation.

Inspection simply means a critical viewing of the walls of the chest of the affected part. There is a normal motion of the chest-walls, and by inspection the examiner is enabled to see whether the motion is normal or unequal or to discover bulging in the walls, which may occur from various causes. By the use of the laryngoscope it is possible to view the larynx and part of the nasal cavity.

Palpation.—This term is used to signify an examination of the chest with the hands. The sense of touch alone may give important indications of internal conditions. The sound of the voice in health produces in the chest a certain vibratory movement, designated vocal fremitus. This can be felt by the hand upon the chest-walls. Where consolidation of the lung is in progress this movement is increased.

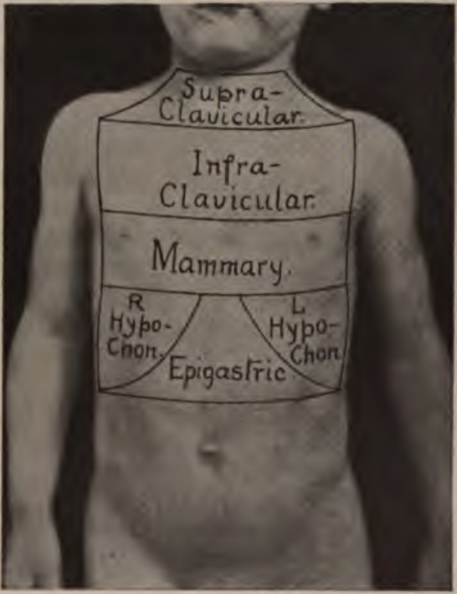


FIG. 18.—Topographic areas of the anterior thorax (Kerr).

Mensuration is a method of examination by means of measurement. There is a normal chest expansion produced by inspiration. When this degree of mobility of the chest-walls is lessened it shows that the breathing capacity is lessened from some cause. Accumulation of fluid or morbid growths may produce a lack of symmetry in the chest-walls, which can also be ascertained by measurements.

Succussion is rarely practised. It consists in a shaking movement given to the chest to determine if fluid is present.

Percussion is one of the most important methods of chest examination. "It consists in striking upon the chest-wall for the purpose of comparing the sounds produced by the percussion with sounds similarly produced in health. Percussion is best performed by placing the forefinger or middle finger of the left hand upon the chest, preferably in the space between the ribs, and striking it a quick, elastic blow with the tips of the fingers of the other hand. The force of the blow should be sufficient to elicit a distinct sound. The sounds may be intensified by placing the patient so that his shoulders may rest against the door. Care should be taken to have both shoulders supported equally. The percussion should be performed upon the bare skin, or with not more than one thickness of muslin over the flesh." (Kellogg.) Nothing accurate can be learned from percussion performed outside the clothing. Percussion in health produces a peculiar resonant sound termed pulmonary resonance. When the sound is muffled it is said to be dull. This dull sound can be heard in

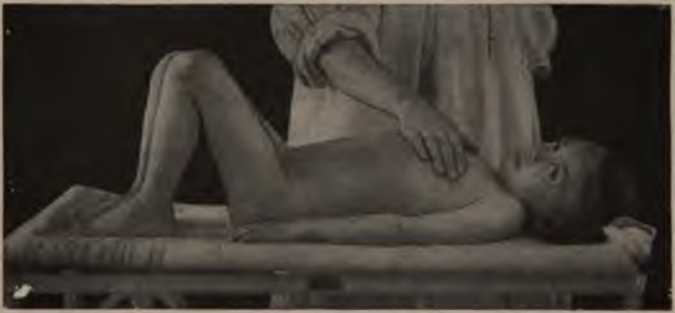


FIG. 19.—Counting the respirations (Kerr).

certain parts in health, notably at the apex of the lung and above the clavicle. Absence of this resonance is termed flatness. Dulness is found in pneumonia and phthisis, owing to the consolidation of the lung. Flatness may be detected in the same diseases. Tympanitic resonance may be noticed in cases in which air is present in the pleural cavity or when large cavities exist in the lung.

Auscultation consists in listening at the chest-wall, either by the ear unaided or with the stethoscope or a similar instrument. Both inspiration and expiration have their peculiar sounds in health and disease. These differ in different portions of the chest.

Respiration.—Important indications are found in the character of the respiration in disease. The breathing may be exaggerated. This often occurs in a portion of the lung which is overworked on account of the inactivity of some other portion. It is also heard in emphysema in some cases. It is common in children in health. Diminished breathing is noticed in consumption in the affected portions. It also occurs in some cases of emphysema. The breathing may be partially suppressed in pleurisy; it may be accompanied by a considerable quantity of fluid in pneumonia, consumption, and obstruction of the bronchial tubes. Bronchial breathing is heard in parts of the chest in which it ought not to occur in diseases in which the lung becomes solidified, as in pneumonia and consumption. Peculiar sounds are produced by air passing through cavities in the lungs. They are sometimes musical in character, often resembling the sound produced by blowing in a bottle. In chronic bronchitis and emphysema sibilant or whistling and sonorous sounds often accompany respiration. These sounds are produced by contraction of the air passages at some points.

Râles.—Certain sounds known as râles are often heard in disease of the lungs, never in health. They are chiefly of four kinds, as follows: "Crepitant râles, a fine, dry, crackling sound, heard just at the end of inspiration, most distinct just after the patient coughs; heard in consumption, pneumonia, and pleurisy. Subcrepitant râles, a fine, bubbling sound, heard in both inspiration and expiration. It occurs in bronchitis, pleurisy, consumption, pneumonia, and in edema of the lungs. Mucous râles, similar to subcrepitant, but louder and coarser; heard in pneumonia, acute and chronic bronchitis, and in consumption. Gurgling râles are heard over small cavities. Sibilant and sonorous râles are mucous râles heard with sibilant and sonorous respiration."

"*Voice.*—The natural sounds of the voice are much modified by disease. The following are a few of the most important modifications: The voice or vocal resonance may be increased, as is usually the case in consumption and pneumonia, and sometimes in emphysema. The vocal resonance is diminished when there is a slight accumulation of fluid in the chest. The voice may be suppressed entirely, as is the case where there are large collections of fluid in the chest. Other peculiar sounds, each of which has its special significance, may be detected by a skilled ear." (Kellogg.)

Coughs.—In general it may be said that a cough is a protest against irritation. The causes of the irritation are as numerous as the variety of coughs. The cough is one of nature's methods of dislodging or ejecting matter which is harmful to the body if retained.

The troublesome "tickling" cough is frequently caused by elongation of the uvula, which irritates the mucous membrane of the larynx. It is often called the "uvula cough" and is frequently associated with enlarged tonsils.

Adenoids in children are a frequent cause of short dry coughs. Mouth-breathing resulting from adenoids is another cause. As a result of mouth-breathing, the throat becomes dry and irritable from taking in air that has not been warmed, filtered and moistened.

Catarrhal coughs frequently result from diseased nasal bones and inflamed nasal mucous membranes.

Changes in temperature are causes of coughs in susceptible people especially if the change be a sudden drop.

The nervous or hysteric cough frequently heard is usually a short bark, and is apparently beyond the power of the individual to control. Its aggravating persistence is often more annoying to those who have to listen to it than to the one who does the coughing.

The reflex coughs arise from irritation and pressure upon one or more organs. Of these the "stomach cough" is most frequently heard. The reflex cough is sometimes a distressing symptom in heart and kidney affections.

The coughs occurring in bronchial affections, in pneumonia and tuberculosis are all efforts to clear the air-passages of harmful secretions. Cough remedies should only be used on advice of a physician.

Sputum.—From an examination of the sputum much may be learned of the condition of the lungs. Its consistency, quantity, odor, color, and constituents should be noted. The consistency of the sputum varies greatly. It may be tough, tenacious, frothy, or liquid. When very firm it is made up largely of mucus, and indicates a decided irritability of the mucous membrane. Dark fluid sputum indicates the presence of pus. This occurs in severe cases of chronic bronchitis, in pulmonary abscesses, in advanced stages of phthisis, and in empyema where an opening in the lung exists. The quantity of sputum is not an important indication except under certain conditions. As a general rule, where sputum is scanty more difficulty is experienced in expectoration. Sudden cessation of expectoration in the course of an acute disease in which it has been copious is always a grave symptom. In a phthisical patient it usually indicates approaching death. When an ounce or more of matter is expectorated at once it often indicates an abscess of the lung or in the pleural cavity. Usually there is little odor to sputum. Sputum with a fetid odor is found in certain forms of chronic bronchitis, in pulmonary abscesses, and where a cavity exists in the lungs, as in some forms of consumption. In cases of gangrene of the lung, where the lung tissue is undergoing a rapid process of destruction, a very foul odor is found in the sputum. Red or rusty sputum indicates the presence of blood, and may mean that a process of ulceration is going on in some part of the respiratory tract. But this is not always the case. Occasionally blood is expectorated at the menstrual period or in cases of interrupted menstruation, and spitting of blood may follow the rupture of an aneurism. The expectorated blood may come from the mouth or pharynx.

Microscopic examination has shown that the sputum frequently contains pieces of epithelium, which may come from the mouth, nasal cavity, or bronchial tubes. Red blood-corpuscles are found in rusty or red sputum. Where there is ulceration or destruction of tissue in the throat or lungs pus-cells may be detected and also fragments of tissue. Some of these fragments are characteristic of a certain stage of a disease, as, for instance, the elastic, yellow fibers found in advanced phthisis. The quantity of the fibers may afford an idea of the rate at which the destructive process is progressing. Disappearance of these characteristic indications means an arrest of destructive process. Putrid sputum always indicates the presence of pathogenic bacteria.

CONGESTION OF THE LUNGS

Active congestion of the lungs—too much blood circulating through the lungs—may occur as a result of increased heart action or from the inhalation of hot air or irritating substances. As a result of diseases which interfere locally with the circulation the lung capillaries may become distended. A certain form of congestion is due to some obstacle to the return flow of the blood to the heart, as in valvular disease, particularly of the left side of the heart.

Hypostatic congestion often occurs in a long illness, as in typhoid fever, which confines the patient to the recumbent position. The bases of the lungs on the side on which the patient is accustomed to lie become congested, partly as a result of feeble heart action and partly from the effect of gravity.

Management.—When congestion occurs as the result of abnormal conditions of other organs the treatment is directed to a removal of the cause. In cases of intense pulmonary engorgement blood-letting is still sometimes resorted to.

EDEMA OF THE LUNGS

"In all forms of intense congestion of the lungs there is a transudation of serum, chiefly in the air-cells."

Accumulation of serum in the cellular tissue occurs frequently in the course of Bright's disease, some forms of heart disease, and cerebral affections. It has been known to follow child-birth. It often occurs suddenly and may prove fatal in a few hours. In acute cases copious purging is secured, and where cyanosis is marked venesection is often resorted to.

[illegible]S

Hemorrhage of the [illegible] ur as the result of congestion in any disease [illegible] the walls of the smaller blood-vessels. It is f[illegible] unded with hemorrhage from the stomach. T[illegible] ble of symptoms indicating the difference in t[illegible] ns is given by Kellogg:

Bleeding from the Lung	*[illegible] ng from the Stomach.*
Difficult breathing.	Nausea.
Pain or heat in the chest.	Tenderness at pit of stomach.
Blood frothy.	Blood not frothy.
Blood of bright red color.	Blood of dark color.
Blood mingled with phlegm.	Blood mixed with food.
No clots.	Clots always present.
Blood coughed up in mouthfuls.	Blood vomited freely.
Symptoms relating to the chest.	Symptoms relating to the stomach.

Treatment.—Rest in bed with the head and shoulders elevated. Keep the patient as quiet as possible mentally and physically. An ice-bag to the chest, bits of ice to swallow, and a teaspoonful of fine table salt taken dry are recommended. Give little food for a day or two following the attack.

PNEUMONIA

Pneumonia, or inflammation of the lung tissues, is said to be the most widespread and fatal of all acute diseases. Lobar pneumonia is a communicable disease due to an infection from a microörganism.

Predisposing causes may be exposure to cold and wet, insufficient and improper food, unhygienic surroundings, or anything that tends to debilitate the system and lower the resistive power. It frequently follows influenza and bronchitis, and may develop as a complication of some other disease. The germ is frequently found in the dust and sweepings of rooms, and is said to be commonly present. Fever and toxemia of varying intensity are characteristic of this disease. Season seems to exercise more influence in the development of this disease than climate. It may occur in any climate, but develops usually in the winter and spring. Children are more susceptible than adults, and alcoholic subjects are frequently attacked.

Stages.—The disease may be divided into three stages—congestion or engorgement, red hepatization, and gray hepatization. In the first stage the capillaries of the air-cells become swollen and engorged, and a certain proportion of the corpuscles escape into the minute air-cells. This stage lasts, as a rule, about thirty-six hours. In the stage of red hepatization the blood-corpuscles which have penetrated the air-cells become consolidated, entrance of air is prevented, and the lung tissue loses its elasticity. This continues for a few days, when the stage of gray hepatization begins. This may be regarded as the first step in the process of resolution. The exudate begins to soften and assume more of a liquid form, and in favorable cases is expectorated or absorbed. The cirulation in the inflamed area is restored, and the lungs

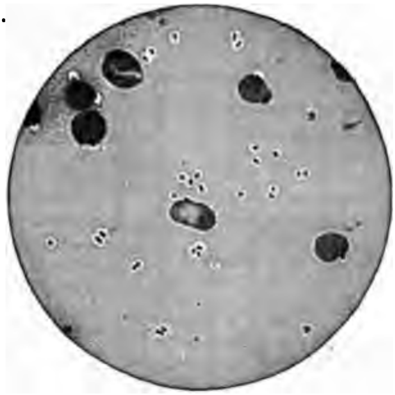


FIG. 20.—Fränkel's pneumococci; × about 800 (from a photograph by Fränkel).

resume their function of aërating the blood. Where resolution does not take place suppuration may follow, or gangrene, as in inflammation in other parts of the body. The lower lobe of the lung is most frequently affected. When the upper portion is affected the condition is more serious. The length of the period of incubation has not been definitely determined.

Symptoms.—The onset is usually sudden, though catarrhal symptoms and general lassitude may precede it by a day or two. The disease frequently follows influenza and bronchitis. A chill may be the first warning symptom. Fever and headache follow the chill, and soon acute pain is felt in the affected side, and the respirations are quickened. Anorexia, furred tongue, and often delirium occur. Dyspnea, cough, and red or rusty sputum are common symptoms. Inspection, palpation, percussion, and auscultation all may reveal characteristic variations from the normal condition. Albumin in the urine is common. There is often a decrease in the secretion of urine, high specific gravity, and increased acidity. The disease terminates abruptly by crisis usually in from five to nine days. A false crisis, in which the temperature may drop only to rise again in a few hours, sometimes precedes the real crisis. When the temperature falls gradually it is called a protracted crisis.

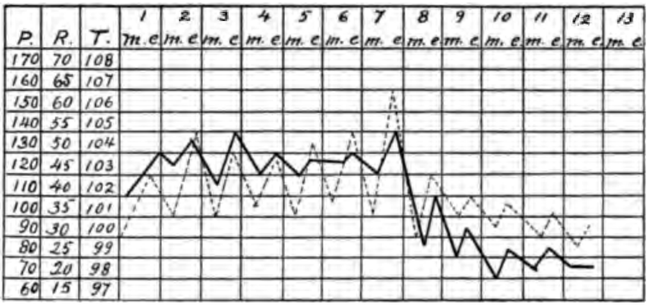


Fig. 21.—Chart of the temperature (——) and respirations (---) in lobar pneumonia. Child one year old (Kerr).

Complications of the disease may be pleurisy, cardiac failure, emphysema, meningitis, jaundice. Abscess or gangrene of the lung may follow. Relapses are common, as are recurrences later in life. Secondary pneumonia occurs frequently in the course of the specific fevers.

Ether pneumonia, or postoperation pneumonia, occasionally occurs. Various causes are assigned for this form of the disease, among which are chilling of the lung tissue by too rapid evaporation of the ether, or infection from the inhaler. Prolonged etherization lowers the vitality of the pulmonary tissue and renders it less resistive to the microörganisms that are usually present. This may act as a predisposing cause.

Management.—Pneumonia is self-limited, running a definite course, and no means of aborting it have been discovered. Cases have terminated abruptly without a dose of medicine having been given. Drugs when used are usually given with a view to the relief of distressing symptoms and not with the expectation of cutting short the disease. The treatment is usually directed to supporting the strength of the patient, relieving local symptoms, and preventing the onset of heart weakness. Hydrotherapy is now largely used to reduce the fever and allay nervous symptoms. An ice-bag over the affected area, cold sponging, and the cold pack are the methods frequently used. In case of critical heart weakness injections of saline solution by rectum or subcutaneously are valuable. Various heart stimulants are used. Oxygen is considered of great value. Fresh air is of primary importance.

In this disease heart failure is always to be feared. The air-cells are partly or wholly congested. The heart has an extra burden put upon it to force blood through the obstructed area, and may collapse under the strain, without previous warning.

An antipneumonococcic serum has been given with good results in many cases.

All sputum should be carefully disinfected and destroyed before drying. The gums and mouth should be cleansed daily with an antiseptic, and a thorough disinfection of the room and its furnishings should follow when the case terminates.

Important Nursing Points.—1. Conserve the strength of the patient in every possible way. Mental and physical effort are both to be avoided.

2. Attend carefully to ventilation. In no acute disease is fresh air more important, but avoid draughts. The cold-air treatment of pneumonia, in which the patient is treated on the roof, porch, or in a room with the windows all open, is advocated and practised by many of the leading medical men, and has proved successful in cases that at first seemed hopeless. *There is no disease that is not made worse by foul air*, and this is particularly true of respiratory diseases.

3. Change the patient's position often, but with as little exertion as possible.

4. Encourage the patient to restrain ineffectual coughing as far as possible.

5. Keep the patient quiet, exclude unnecessary visitors, even the family. In no disease is absolute rest more essential.

6. Be prepared for possible contingencies and secure orders from the physician as to what he wishes done.

7. In the use of alcohol be especially careful to give the exact dose ordered. The laity, many of them at least, are firm believers in the value of alcohol to tide over critical stages. They act on the principle that if a little is good more will be better. Some nurses have applied the same method of reasoning in regard to alcohol. There is a danger of overstimulating the heart and of giving more alcohol than the nervous system can tolerate, thereby producing a condition of poisoning of the nervous organism. This is more likely to occur in patients who in health are unaccustomed to any form of alcohol. When leaving the patient in charge of an assistant in private practice this point may need a word of special caution.

8. Sleep is especially important for such patients, and to combat sleeplessness frequently requires more than ordinary judgment.

9. Remember that there is a possibility of heart failure even two or three days after the crisis in the disease. Sudden deaths have occurred in convalescence as the result of sudden sitting up in bed. Throughout the disease be constantly on the watch for evidences of serious circulatory embarrassment.

10. Be alert, observant, and closely attentive at all times.

Do not leave such patients alone. Keep full, accurate records.

The *diet* in pneumonia is the ordinary fever diet carefully administered. Vomiting must be guarded against if possible, and the food should be such as will not create gas in the stomach and still further embarrass breathing.

Favorable Symptoms.—Apart from favorable changes in temperature, pulse, and respiration, there are a few special signs which are mentioned by medical writers as being of favorable import—sneezing, yawning, or stretching when awaking from sleep, late in the attack, and the eruption which sometimes appears around the mouth are among the favorable signs.

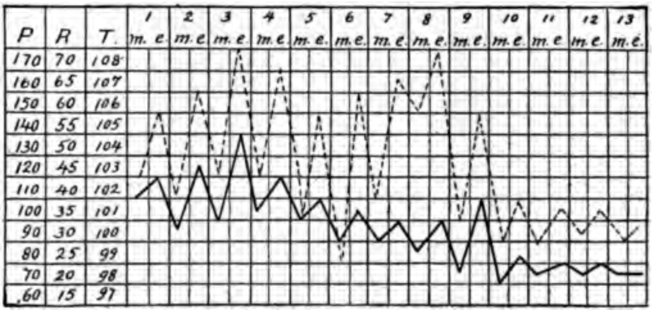


Fig. 22.—Chart of the temperature (——) and respirations (---) in bronchopneumonia. Child one year old (Kerr).

Unfavorable Symptoms.—Prune-juice colored expectoration; abundant liquid expectoration; delirium, with moderate fever; duskiness of the face and blueness of the nails; cessation of expectoration about the fifth day; respiration persistently above 60 and pulse above 130 per minute in adults; a non-obtrusive "click" with respiration after coughing.

Bronchopneumonia is a disease occurring chiefly in children and old people. It may occur as a primary disease, or during the progress of measles, diphtheria, whooping-cough, scarlet fever, or any of the acute communicable diseases. Children under two years are highly susceptible subjects. It is said that bronchopneumonia ranks next to infantile diarrhea in fatality, especially in large cities. Rickets and diarrhea are predisposing causes in those subjects. Much can be done to prevent this disease by carefully guarding children during the progress of acute diseases.

An even temperature should be maintained night and day, and the patient kept warmly clad to prevent chilling. Catarrhal conditions of nose and throat should be attended to and an antiseptic mouth-wash used. During the acute stages of the disease milk broths and albumin constitute the diet. Symptoms are treated as they arise. Emetics are often needed to facilitate the expulsion of mucus and relieve the dyspnea. The general symptoms and treatment are similar to lobar pneumonia. Hot packs instead of cold wet packs are frequently given, especially when there is little fever.

BRONCHITIS

Bronchitis is an acute catarrhal inflammation of the bronchial mucous membrane. It is really an extension downward of acute coryza. The inflammation may affect only the larger tubes, or the smaller tubes may be invaded and capillary bronchitis result. Inflammation of the smaller tubes, or bronchioles, may rapidly spread to the air-cells and bronchopneumonia follow. The disease may be acute or chronic, the latter stage following the former.

The **symptoms** depend very greatly on the size of the tubes affected. In acute catarrh the following symptoms are prominent: Chilliness, slight fever, headache, coated tongue, anorexia, sense of tightness in the chest, cough. Sputum is at first frothy, later darker in color. Rattling sounds can be heard in the chest. The acute symptoms often subside in a week or ten days and a rapid convalescence follows.

General Considerations.—The chief danger is the extension downward of the inflammatory process. Inhalation of hot medicated vapors often relieves local distress. In these the compound tincture of benzoin and eucalyptus are drugs frequently used. Dust in the sick room should be avoided. In children great difficulty in expectoration is often experienced, and an emetic may have to be used to relieve the dyspnea and get rid of the secretion. A teaspoonful of wine of ipecac is often given for this purpose.

Chronic bronchitis occurs usually after middle life. It is frequently met with in heart disease, aneurism, gout, renal diseases, and chronic diseases of the lungs. A change of climate is always advisable in chronic bronchitis. In acute bronchitis a liberal nourishing diet is required to maintain the patient's strength. The expectorants most frequently given are bicarbonate of ammonia, iodid of potassium, squills, paregoric, and ipecacuanha.

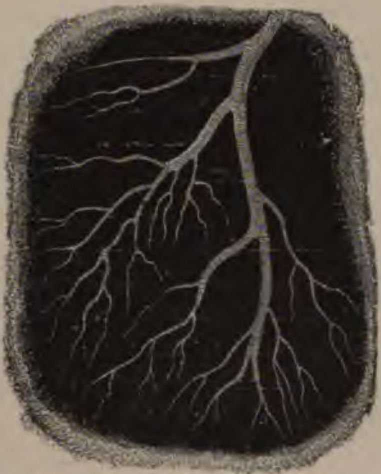


FIG. 23.—Large bronchial coagulum; chronic fibrinous bronchitis (Vierordt).

Bronchial, or spasmodic, asthma is frequently confused with other diseases in which dyspnea occurs, as in affections of the heart and lungs. The disease consists in a contraction of the muscles of the smallest bronchial tubes—those nearest the air-cells. The contraction prevents the air from passing out of the lungs. Severe paroxysms sometimes occur as a result of indigestion. Excessive muscular exertion, dust, inhalation of particular fumes, or violent emotions may all tend to produce paroxysms.

The causes may be summed up as follows: Direct irritation of the mucous membrane of the nose, reflex influence of the stomach, intestines, or genital organs. It frequently occurs in the course of some other chronic disease, as in emphysema, dyspepsia, diseases of the liver or of the ovaries or uterus.

Symptoms.—Premonitory symptoms sometimes precede attacks, as chilliness, depression of spirits, headache. When the paroxysms occur there is great dyspnea, pallor, sense of constriction about the chest, feeble pulse, prolonged and wheezy expiration, profuse perspiration, and coldness of extremities.

Immediate treatment is directed to producing relaxation. A few inhalations of chloroform will usually give relief, or of nitrate of amyl. The fumes from the burning of nitrate paper, made by soaking blotting paper in a solution of saltpeter and drying, is said to afford speedy relief. To prevent recurrence of the attacks iodid of potassium has proved serviceable. A diet in which the carbohydrates are restricted is advised, and when possible a change of climate.

A method of relief of the spasms which is said to be prompt and usually effectual is a modified form of artificial respiration. It consists simply in the nurse or other person watching the asthmatic, waiting until he has taken a breath, and, if expiration does not immediately follow inspiration, bringing it about by forcible manual compression of the chest.

If the patient's shoulders are not against a firm surface it is necessary to place one hand in front and one behind his chest when compressing it. In old people, whose chests are more or less rigid, both hands should be employed and spread out over the lower ribs. According to some medical writers, the spasm passes away altogether after forced expiration has been practised for a short time.

A hypodermic injection of morphin $\frac{1}{4}$ gr. and atropin $\frac{1}{150}$ gr. is often used to secure prompt relief.

EMPHYSEMA

Emphysema is defined as an abnormal condition of the lungs in which excess of air is the predominant feature. There are a variety of types of the disease. It sometimes occurs as a result of pleurisy in which adhesions had formed, bronchitis, and not infrequently is induced by indiscreet playing of wind instruments. As a result of stretching and thinning of the cell-walls many of the capillaries become atrophied, and the result is an insufficient supply of oxygen to purify the blood. The lungs are unable to empty themselves, and certain poisons remain in the system, producing cyanosis. The obstruction to the pulmonary circulation frequently causes congestion of adjacent organs. The prominent symptoms are dyspnea, cyanosis, and usually a cough.

The treatment usually given in bronchitis is often used in this condition. A complication of bronchitis is greatly to be feared. Special attention should be given to diet, as the patients are liable to gastric and intestinal disorders.

PLEURISY

Inflammation of the membrane which lines the chest-walls and covers the lungs may occur as a complication of pneumonia, acute rheumatism, in the course of the specific fevers, or as an independent affection. Three forms of this disease are recognized. The dry form is that in which there is no exudation of fluid in the pleural cavity. In effusive pleurisy there may be a rapid accumulation of fluid on the affected side. The quantity may be so great as to cause compression of the lungs or displacement of the heart. This effusion may be serum, or it may consist largely of pus. Suppurative pleurisy, or empyema, is more liable to occur in the course of the specific fevers than as an independent affection.

Symptoms.—In acute pleurisy there is chilliness, fever, sharp pain in the affected side; hard, rapid pulse; grating sound over the affected area. Pain is increased by coughing or pressure or lying on the affected side. The chest-walls may noticeably bulge and the depressions between the ribs be obliterated. In dry pleurisy but little treatment is required besides rest in bed and local measures for the relief of pain. Strapping with adhesive plaster is sometimes used to lessen the motion of the chest-walls. In effusive pleurisy the fluid may be absorbed. If this does not take place the accumulation must be removed to relieve the pressure on other organs. Removal by means of an aspirator is the usual method. Where there is reason to suspect the presence of pus in the pleural cavity it is not sufficient to relieve the pressure on the other organs. The cavity requires to be opened and drained out, as absorption of pus is never desirable. Such cases require skilled care and unremitting attention.

Empyema (pus in the pleural cavity) frequently develops insiduously after pneumonia. Some authorities state that "under three years of age, a pleural effusion is in almost every instance purulent. In later childhood it may be tuberculous." Albuminuria is frequently present.

Important points in the nursing of these cases after operation are: Keep patient on the affected side as much as possible to encourage free drainage of pus. See that all movements of the patient are slowly and carefully made. Do not turn suddenly or frequently. The color of the patient should be watched, especially when exertion has been made such as in changing gown, making bed, etc. During dressing the tube is removed to permit any accumulated pus to escape. Never wash out an empyemic cavity except by doctor's orders. Take care that the flow of fluid out of the chest is as free as the flow in, or the heart action may be embarrassed. Be sure to secure drainage-tube in position with a safety-pin. It could easily find its way into the cavity and cause trouble. Neglect of this precaution has caused serious results. A vacuum apparatus which facilitates the cleansing of the cavity is used in some hospitals. Such cases are usually soon allowed out of bed. "During convalescence it is important to see that the lung is expanded by deep respiration. Bubble-blowing or blowing the water from one vessel to another are recommended."

PNEUMOTHORAX

Pneumothorax signifies air in the pleural cavity. This cavity is a closed sac, and in health contains no air. When air enters it must enter through a cavity in the lungs or from an opening into the external world. It may occur in phthisis from a destruction of lung-tissue, or the pus in empyema may burrow into the lungs and be discharged from the air passages. Bullet or knife wounds in the side are common causes of pneumothorax. The symptoms are intense dyspnea and pain, followed by shock. It is always serious and frequently fatal.

HAY FEVER

Autumnal catarrh (hay fever) is an acute affection of the upper air passages, characterized usually by asthmatic attacks. It is said that the pollen of various grasses and flowers has a powerful effect in producing the disease in susceptible persons. Usually there is either a disease or a hypersensitiveness of the mucous membrane of the nasal passages, and persons of a neurotic constitution are more likely to be attacked. A sudden change of temperature may be sufficient to cause a paroxysm.

Treatment is directed to improving the condition of the nervous system and removing any local irritation in the nose. A change of climate is often helpful.

CHAPTER VI

DISEASES OF THE RESPIRATORY SYSTEM (Continued)

TUBERCULOSIS

TUBERCULOSIS is a chronic communicable disease caused by the growth of the tubercle bacillus in some of the tissues of the body. When the disease attacks the lungs it is called pulmonary tuberculosis or phthisis.

The term "consumption" is used interchangeably with tuberculosis.

Three varieties of pulmonary tuberculosis are recognized:

1. *Acute pneumonic phthisis*, commonly termed "quick" or "galloping" consumption.
2. *Chronic ulcerative phthisis*.
3. *Fibroid phthisis*.

The first type runs a rapid acute course, resembling in many ways pneumonia. The patient may die in the second or third week.

The second type is the most common, and includes the great majority of tuberculosis patients.

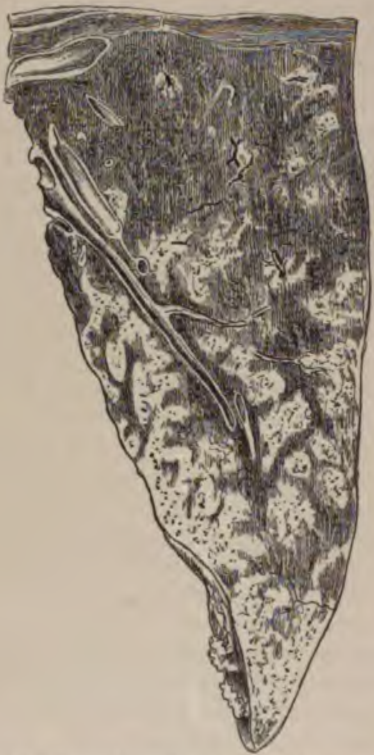


FIG. 24.—Extensive bronchogenic tuberculosis (caseous pneumonia) of the base of the lung (Orth).

The third type may last from ten to twenty years, during which time the patient may have intervals of fair health. In this type there is little or no fever, usually a harassing morning cough, the shoulder is lower on the affected side, and the chest sunken. The heart is often displaced, and death may occur from some form of heart affection. Dropsical effusions in these cases are not uncommon.

The *germ of tuberculosis* produces countless small nodular lesions. The affected area is studded with these tuberculous nodules, sometimes as large as pin-heads. As the disease progresses these become larger and coalesce. A chronic inflammation of the area between these nodules results in the solidifying of the part affected. In the next stage the nodules soften, and later the entire lobe may be changed into a dry, yellowish, cheesy substance which admits no air. Death may occur before the softening takes place and hemorrhage from the lung is common.

In *chronic ulcerative tuberculosis* of the lungs the lesions proceed to ulceration and softening. Later the softened material is coughed up, leaving cavities of various sizes. Changes in the pleura and bronchi and lungs occur. The cavities may have certain areas filled with cheesy masses, others covered with nodular deposits. Even after a cavity has formed the disease may be arrested, but the tendency is for the cavity to increase. Occasionally changes take place in the affected area, and the process of destruction is arrested or prolonged. A gradual sclerosis of the affected part takes place. This process of sclerosis is sometimes confined to the borders of the mass of cheesy matter, and a capsule is formed, limiting the spread of the disease and constituting the healing of the area. A large cavity never heals completely.

Symptoms.—The early symptoms are usually progressive weakening, fatigue on slight exertion, and loss of flesh. There may be night sweats, cough, morning nausea, and laryngitis, but in some cases the cough is not present until the disease is far advanced, with well-marked cavities in the lungs. There are also chest pains, difficulty in breathing, and an elevation of temperature, especially in the afternoon and evening hours. In the later stages all these symptoms are exaggerated. Expectoration is more profuse and hemorrhages from the lungs are common.

Mode of Entrance.—The tuberculosis germ may enter the body in three ways:

1. By being inhaled.

2. By being ingested, or taken into the body with food or drink.

3. By inoculation, or penetration through a wound in the skin.

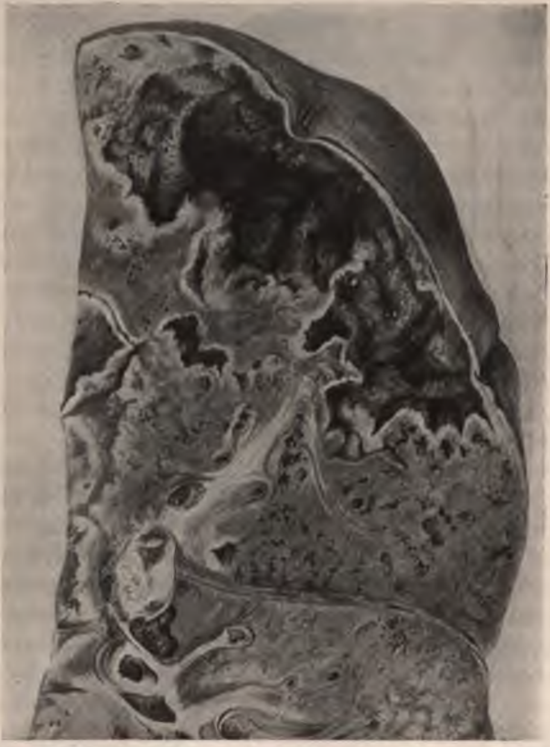


FIG. 25.—Tuberculosis of the lung. The upper third contains large cavities; the middle is in an advanced stage of caseation, while the lower lobe shows a more acute caseous pneumonia accompanied by the eruption of miliary, mostly peribronchial, tubercles (McFarland).

Tuberculosis may be transmitted through the air-passages by means of dust containing the germ, through dishes and table utensils, through the saliva, by kissing, by the use of meats or milk from a tuberculosis animal, and occasionally through the skin.

The chief mode of communicating the disease is by means of the dried sputum of consumptives. The germs exist in millions in the expectoration of a consumptive. These germs have great vitality, and exist for a long time after drying and mixing with dust. Experiments have proven that the minute drops of saliva which are thrown out during loud speaking, sneezing, or dry cough may also communicate the disease, though this danger is relatively slight. The expired air from the consumptive's lungs is not infective. Authorities all agree that the consumptive himself is harmless, or practically so, providing his habits and the methods of caring for him are good.

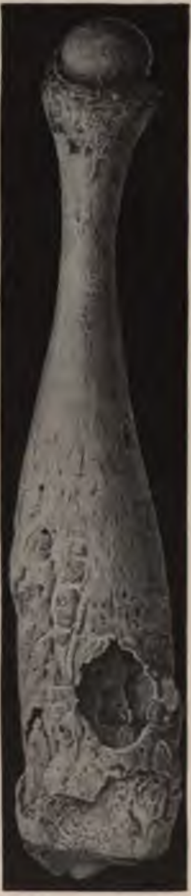


FIG. 26.—Tuberculous "abscess" in the lower end of the humerus (modified from Bollinger).

Predisposing causes are hereditary, debilitating diseases, damp, dark, unsanitary surroundings, lack of ventilation, alcoholism and excesses of all kinds, improper foods, and occupations in which irritant particles are inhaled. The disease is most common in early adult life, by far the greater number of cases occurring between the ages of eighteen and thirty-five years.

Heredity.—It is seldom that an individual is born with the germs of tuberculosis in his system. He may, however, be born with feeble resistive powers, with a narrow, flat chest, and a generally delicate constitution, which renders him more liable to fall a victim to communicable diseases of any kind. A baby who is born free from tuberculosis has every opportunity to acquire it if he is much in contact with consumptive individuals, if he is kissed on the mouth by them, or allowed to be on the floor on which the consumptive germs are in the dust. The child instinctively carries everything he can grasp to his mouth, and if the germs are in the dust he cannot expect to escape them. But no one is foredoomed. Natural tendencies can be and are overcome.

Natural Protection.—There is no need of any one having an exaggerated fear of this disease. The secretions of the nose and stomach have some germicidal properties. The body has its own protective forces always at work. A perfectly healthy body is not a favorable soil for the development of the disease. "There are tissue soils in which the bacilli are in all probability killed at once—the seed has fallen by the wayside. There are others in which a lodgment is gained and more or less damage done, but finally the day is with the conservative protecting forces—the seed has fallen upon the stony ground. Thirdly, there are tissue-soils in which the bacilli grow luxuriantly, caseation and softening, not limitation and sclerosis, prevail, and the day is with the invaders—the seed has fallen upon good ground."[1]

To *overcome a predisposition to* tuberculosis the most careful attention should be paid to details of living. If the mother has consumption when the child is born she should not attempt to nurse it. The child should not sleep in the same bed with its mother, and should spend as much time as practicable in open air. The living and sleeping rooms should be well ventilated day and night, should never be overheated, and the child should be gradually accustomed to cold baths after the first year. Lessons in deep breathing should be begun as soon as the child is able to follow instructions, and breathing and chest expansion exercises should be regularly taught and practised as soon as it is practicable to begin.

Children who have narrow, flat chests are prone to acquire the habit of stooping, which must be guarded against by proper exercise. The clothing should be such as will not impede the functions of the body in any way. Corsets should never be worn by girls who have this predisposition. The weight of the garments should be arranged according to the weather, but too much clothing should not be worn. Crowded rooms and smoking are both conducive to the development of chest troubles and should be avoided. All such children should sleep with the bedroom windows open every night. The night air in cities is purer than the day air, and ideas that night air is harmful should be combated.

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[1] Osler.

Occupations to be avoided by those who have a predisposition to tuberculosis are printing, painting, tailoring, weaving, cigar-making, baking, flour-making, and various other occupations, such as stone-cutting, or any work in which an individual is much exposed to dust or vitiated air. Occupations which are favorable to overcoming the tendency are farming, gardening, driving a vehicle—any occupation which will require that the work be done out of doors.

Treatment.—The treatment of tuberculosis includes four distinct elements:

1. Rest.
2. Abundance of easily digested, nourishing food.
3. Fresh air.
4. Freedom from worry, and cheerful, comfortable surroundings.

None of these alone, nor even two of them combined, are sufficient. A tuberculosis patient may live out of doors day and night and fail to improve unless he has the right diet. He may have plenty of fresh air and good food and fail to improve if he engages in active exercise when he should rest. He may have the first three and yet constantly grow worse because of loneliness or home-sickness or worry or generally depressing surroundings. For these reasons it is a mistake to encourage a patient, unless he has ample funds to secure all these things, to separate himself from his friends and go to a distant place under the delusion that a change of climate will cure him.

The average patient with limited means has a far better chance of securing all the essentials to a cure in his own back yard at home. A month or two in a sanitarium is exceedingly valuable in its educational effects on such patients, and the régime carried on in the sanitarium should be continued at home as long as may be necessary. Except for a few months in the winter, a tent in the yard, or a veranda with a southern exposure, can be arranged to meet the requirements in that line which are necessary to a cure. In winter a window tent, which is arranged so that the head is practically out of doors while the body is warmly covered inside, is practicable for most homes.

Difficulties regarding the fresh-air treatment are common. Many persons find that the respiratory organs at first are irritated and their symptoms exaggerated by life in the open air, especially in foggy weather. Such cases, and all cases who start this treatment in cold or damp weather, need most discreet management, or the cure will certainly aggravate the disease. Because of the profuse sweating such patients are more than usually susceptible to draughts and take cold easily.

Certain climates have undoubted advantages, but tuberculosis can be cured in any state if treatment is begun before much lung-tissue is destroyed.

Rest and Exercise.—The rule made by most physicians is that while there is fever the patient should rest in bed. Consumptives innumerable have exercised themselves into the grave. As the fever disappears and strength is regained exercise may be very gradually and cautiously taken, always stopping short of fatigue. As the strength returns exercise may become an important factor in the cure, but this is a matter to be decided by the physician, not by the patient, who is very often impatient in this stage. Many relapses have been caused by injudicious exercise.

Artificial pneumothorax, in which the lung is collapsed by artificial measures, is occasionally resorted to and in some cases has given excellent results in combination with other forms of treatment.

Psychotherapy is an important element in the treatment of this disease. The mental condition of the patient is a strong factor in his recovery, or his failure to progress satisfactorily. The dividing line between a wholesome courage and optimism, and the recklessness which leads to taking unnecessary risks, needs to be understood by both nurse and patient.

Diet.—In the diet meats, milk, and eggs in abundance should be included—all of these to be the best that can be secured. Plenty of cream, butter, olive oil, and fat of meats are desirable.

Forced feeding is much less used than was the case a few years ago. In many of these patients there is a positive aversion to food, and this forms one of the chief obstacles in the treatment. Every effort should be made to prepare the food so that it will be attractive as well as easily digested. The patient's tastes should be considered as far as practicable. There is no special advantage in the use of raw over properly cooked eggs in this disease. Fruits and vegetables sufficient for variety are allowed, preference being given to vegetables which furnish the nitrogenous element in greatest quantity, such as peas and beans. Milk and eggs should be used as far as possible in preparing vegetables, so as to increase the nutritive value of the foods. A liberal mixed diet, with milk at meals, and once between regular meals, is the rule in many well-managed institutions.

The *digestion* in this disease has much to do with the final results of treatment, and from the beginning to the end this point needs to be carefully studied. If there is persistent nausea, loss of appetite, and gastric disturbance little improvement may be expected. Nursing in this disease is not a success unless the fine art of cooking and serving is given constant attention. The administration of milk often requires much judgment in this disease. Raw beef has been found to be of particular value in some cases of tuberculosis, about a half pound being administered in this way each day. It may be prepared by scraping, ground to a pulp in a mortar bowl, properly seasoned, and mixed with mashed potatoes, or the pulp may be beaten into one or two eggs and a little milk and heated for a minute, long enough to allow the mixture to boil up once. Scraped beef sandwiches are rarely objected to by even the most fastidious if properly made. The scraped beef, well seasoned, is spread between two thin slices of bread, cut in triangles, squares, or strips. A leaf of crisp lettuce or a bit of water cress added makes a very palatable lunch with a glass of milk.

The stools of all tuberculosis patients should be observed for signs of undigested food.

Medicines in this disease have no special effect as cures, and are used principally to relieve symptoms, improve digestion, etc.

Coughing can occasionally be temporarily relieved by simple inhalation of steam, the head being wrapped in a bath towel or small blanket and held over a pitcher of boiling water, to which a teaspoonful of compound tincture of benzoin may be added. An irritative cough often exists without much expectoration. In this kind of cough, education of the patient will help to suppress it. All patients who have respiratory ailments are prone to cough more frequently and violently than is necessary. They should be encouraged to control the cough whenever they can. Tuberculous patients need especial instruction to cough as gently as possible, as there is danger of spreading the tuberculous process over a larger area in the lung and also a danger of hemorrhage from violent coughing. The irritative cough without much expectoration may persist in spite of all efforts until some form of opiate is given.

The following rules regarding "how to cough" are given by A. A. Pleyte, M. D.[1]

"Fold your handkerchief so that it is about five inches square. Place it flatly in the right hand, if you are right-handed, and with this hand hold it tightly over the mouth. Press the hand on the mouth, since to hold it loosely over the mouth will not accomplish our purpose. Instead of coughing and trying to muffle the sound in your throat or mouth, muffle it with your handkerchief. Practice it until a person 10 feet away cannot hear you. The sound made in coughing is due partly to air passing over the vocal cords, partly to air going through the bronchial tubes and trachea and partly to the resonance produced in the chambers lying above the trachea. This sound can be almost wholly avoided and the irritation to the lungs and air passages prevented by keeping the air passages open and letting your handkerchief do the muffling. Instead of expelling 120 cubic inches of air at each expiration, you will expel a smaller amount with more comfort to yourself, and to those around you and with much less harm to your lungs.

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[1] Journal of Outdoor Life.

Hemorrhage.—One of the serious developments to be feared in pulmonary tuberculosis is hemorrhage. This occurs frequently as a surprise when a patient is feeling as well as usual, and the condition is always alarming to the patient. Prompt aid is needed.

Management.—Rest in bed in a recumbent position. Quietness. The psychic treatment in most cases is important. Fear must be combated by all possible means. An ice-bag over the heart; chipped ice to swallow are usual nursing measures. Every nurse should secure standing orders from a physician as to further measures to be used should the physician's arrival be delayed and the hemorrhage continue.

A hemorrhage basket containing all the requisites for prompt treatment is in use in many of the well-equipped tuberculosis hospitals. The basket used in Cook County Tuberculosis Hospital, Oak Forest, Ill., contains the following: one rubber bib; two towels, two pus basins; one ice-cap; one bowl for chipped ice; one teaspoon for chipped ice; one ice-pick; one jar cotton pledgets; one bottle alcohol, 4 ounces; one bottle sterile water; one hypodermic syringe; three hypodermic needles (aseptic); wires for needles; nitroglycerine gr. 1/100; atropine sulphate gr. 1/150; morphin sulphate gr. 1/4; pituitrin; amyl nitrite pearls; thirty-six gauze squares 3 × 6; sol. magnesium sulphate; glass drinking tube; one 6-pound paper bag. The basket for these articles is 20 × 27 inches and 6 inches deep, with compartments. A card with standing orders and one with a list of the contents which must be kept in readiness, is attached to the side of the basket.

Prevention.—"1. The sputum or matter coughed up by a consumptive should not be spit upon the floor, carpet, stove, wall, or sidewalk, but always, if possible, in a cup kept for that purpose.

"When a metal, glass, or earthenware cup is used it should contain 5 per cent. solution of carbolic acid, to prevent the sputum from drying and destroy the germs. The cup should be emptied into the water-closet at least twice a day and thoroughly washed with boiling water.

"When consumptives are away from home the sputum should be received into a pocket-flask of glass, metal, or pasteboard.

"Whatever receptacle is used it should have a cover, so that flies may not have access to its contents.

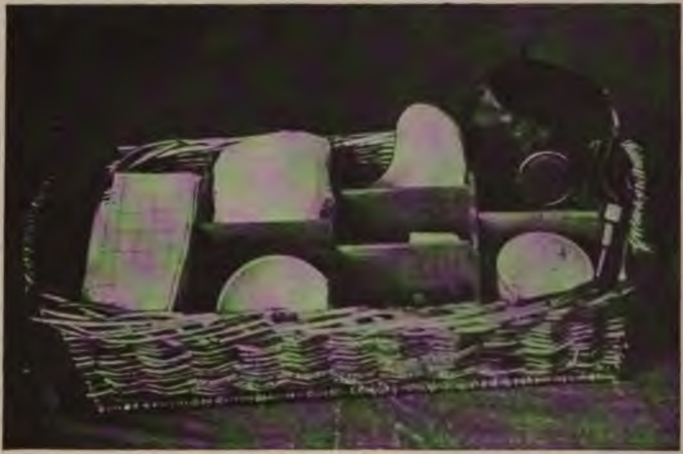

FIG. 27.—Hemorrhage basket. Cook County Tuberculosis Hospital, Oak Forest, Ill.

"Patients too weak to use a cup should use moist rags, which should at once be burned.

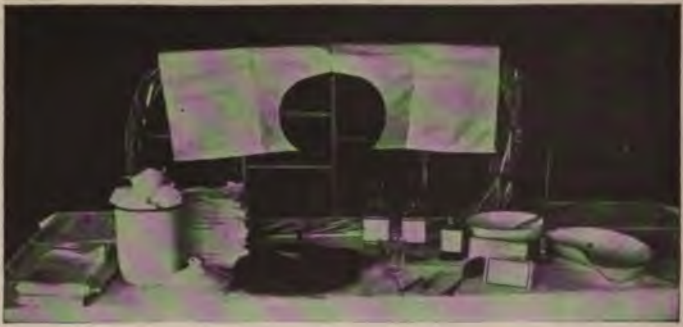

FIG. 28.—Contents of hemorrhage basket.

"If cloths or handkerchiefs are used by a consumptive they should not be carried loose in the pocket, but in a waterproof receptacle, such as a tobacco pouch, which should be frequently boiled. If handkerchiefs are used they should not be put in a laundry bag or receptacle with other soiled linen, but should be kept immersed in a 5 per cent. carbolic solution, or should be boiled at once in water for at least half an hour.

"A consumptive should never swallow his sputum. Sputum swallowed may spread the disease to other organs. The hands should be washed and the mouth rinsed out before eating.

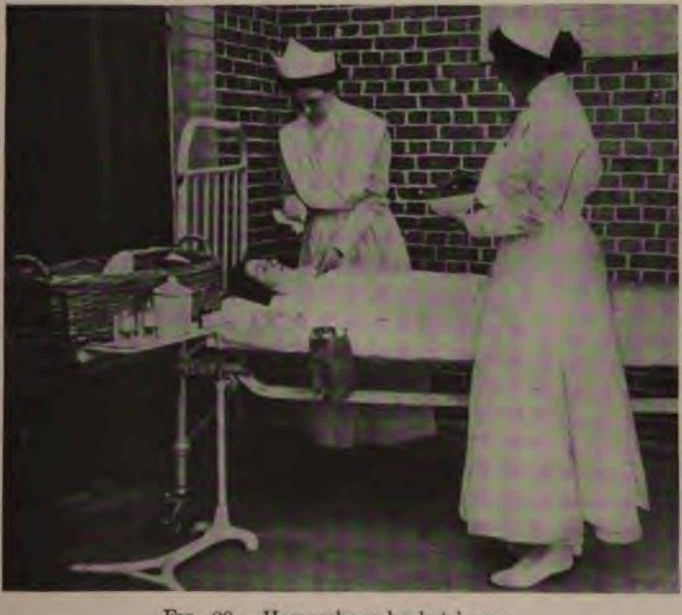

Fig. 29.—Hemorrhage basket in use.

"2. Great care should be taken by the consumptives to prevent their hands, face, and clothing from becoming soiled by their sputum. If they do thus become soiled they should at once be washed with soap and water.

"3. Consumptives should always hold a cloth or handkerchief before the face during coughing or sneezing, lest germs be scattered in the small particles of spittle that are then forcibly expelled.

"4. A male consumptive should be clean shaven. Hair about the face is apt to retain the germs existing in particles of spittle ejected during coughing or sneezing.

"5. A consumptive should have his own bed and, if possible, his own room. Both the bedroom and living-room should have as much direct sunlight as possible, and should always have an abundance of fresh air—the window should be open day and night. Many consumptives have benefited greatly from sleeping out of doors in tents, on roofs or piazzas.

"6. The rooms should be cleaned daily, but, to prevent the raising of dust, all dusting should be done with damp cloths, and before sweeping floors must be well sprinkled with sawdust, small scraps of paper, or tea leaves, all thoroughly moistened.

"7. A consumptive's soiled clothes and bed linen should be handled as little as possible when dry, but should be kept immersed in water until the washing is to be done.

"8. All rooms or apartments which have been occupied by persons suffering from consumption must, on death or removal, be thoroughly disinfected. No other persons should be allowed to reside therein until this rule has been complied with.

"9. A consumptive woman should not nurse an infant. It drains the strength of the mother and subjects the child to the danger of infection."[1]

The *room occupied* by a consumptive patient should be well lighted and ventilated, even if there is no hope of a cure. The dangerous qualities of the sputum are diminished quickly by exposure to sunlight and fresh air. Sunshine is one of the best disinfectants, and a room flooded with sunshine is far less dangerous to those who are associated with the patient. The dilution of the atmosphere with fresh air also lessens the danger of contracting the disease.

Predisposing Diseases.—Patients who have suffered from grippe, pneumonia, measles, bronchitis, and other diseases in which the respiratory organs have been affected, should especially guard against this disease. The diseases mentioned have paved the way for consumption in many cases.

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[1] Bulletin Ontario Board of Health.

These patients should remain under treatment and avoid exposure to cold, damp, or sudden changes of temperature until their normal health has been fully established.

The *infectious character of consumption* has been overestimated by many. Tuberculosis is not contagious in the same way as diphtheria, scarlet fever, or small-pox, and much harm is done through a totally unwarranted fear of consumptives. It is said by eminent authorities that one is less in danger of contracting the disease in a sanitarium for this class of patients than almost anywhere else. In localities where such institutions are located the mortality from consumption has markedly decreased. The patient is only a source of danger through discharges from diseased tissues, chiefly the sputum, and if these are properly cared for contact with the consumptives is practically free from danger.

The danger of infection is greatest in the house or workshop or office where the sun has less opportunity to do its preventive work than outside. Dark rooms or dwellings are always dangerous, and alleys, courts, and dwellings shut off from light are specially good breeding places for the disease.

CHAPTER VII

DISEASES OF THE DIGESTIVE SYSTEM

Diseases of the digestive system can only be intelligently studied by those who have previously acquired a good working knowledge of dietetics, and who understand how the process of digestion is carried on and the part played by each of the digestive organs and juices.

The problem of diet not only underlies most diseases of the digestive tract, but it underlies a large number of other diseases.

"Almost the whole category of ills that manifest themselves in joints, muscles, and nerves, that are commonly called rheumatism and gout, are directly traceable to the improper diet of the individual sufferer or of a long line of self-indulging ancestors. Bright's disease is as often caused by the intemperate use of meats as it is by the abuse of alcohol. The same is true of chronic disease of the liver, of the arteries, of the nerves, of the skin, and of the mucous membranes. The therapeutics of food is one of the important subjects which the wise physician must understand fully."[1] It is one of the important studies which is quite as important for the nurse as for the physician. The uses of the different articles of food, their relative value, the proper method of preparation and administration, is one of the most important of all studies in a nursing course.

Functional digestive disorders are probably the most prevalent of all ailments. In these the organs of digestion have undergone no organic change in tissue or structure, but for some reason they are failing to do properly the work for which they were intended. The causes of these disorders are manifold. In these, as in many other forms of digestive ailments, the first and most potent cause is imperfect mastication. Diseased or lost teeth are now believed to be among the important contributing causes in a great many patients who suffer from digestive disorders.

Other causes may be found in nervous and mental influences, circulatory disturbances, and the amount of exercise taken.

Imperfect Mastication.—"The habit of swallowing food so soon as it can be gotten or washed down the gullet introduces into the stomach undivided masses that must be thrown back and forth by the muscles of the stomach with great and unnecessary labor until it is either made soluble or, failing that, is passed on into the intestines and gotten rid of as a putrifying and dangerous mass of waste matter. Such a method of eating constantly irritates the stomach and changes the composition of its normal digestive juices. The stomach expresses its resentment in many forms of indigestion, in gastric catarrh, and ulcers."[1]

The *nervous system* exercises a complex influence on the process of digestion. Its action is mainly reflex. In the earlier stages of digestion it may check the activity of the gastric glands and alter their secretions. In the later stages it may retard or prevent absorption. "Overstimulation of the local nerves of the alimentary tract may excite an increased watery secretion and exaggerate peristalsis, hastening the passage of food through them before there is time for digestion and absorption, thus giving rise to diarrhea."

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[1] John L. Heffron, M. D.

Mental Emotion.—It is well known that any strong mental emotion, such as fright, terror, worry, or excessive excitement, will disturb the digestive process. The appetite is usually lessened and the functions of both stomach and intestines are interfered with. "Prolonged anxiety and worry in almost every instance result in more or less gastric indigestion and malassimilation, so that, although the appetite may remain good, nervous dyspepsia, constipation, and loss of weight result."[1]

Circulatory Disturbances.—When the composition of the blood is abnormal, or the blood is deficient in quality, as in anemic conditions, it cannot supply to the digestive glands good material for the manufacture of the various digestive juices. The muscular walls of the stomach and intestines will be weakened and there will be less peristaltic activity. Poor circulation is very likely to mean also poor digestion, and healthy, active circulation usually accompanies good digestion.

Exercise.—The influence of exercise on digestion is well understood. Moderate exercise of all the muscles of the body is an aid to digestion, partly through its influence on respiration and circulation. It is said that horseback riding is one of the best forms of exercise for many forms of dyspepsia. Walking, exercise with the arms, and moderate gymnastic exercise help in promoting appetite and improve general functional activity. Vigorous exercise after a full meal retards digestion. A meal eaten when the body is excessively fatigued is very likely to be retarded in digestion and undergo chemic changes which may produce gas or otherwise exercise an irritant effect on the alimentary tract.

Fletcher's System.—The system of dietetic management now commonly known as Fletcherism has been endorsed by many modern physicians, and is being recommended (with modifications to suit individual cases) to an increasing number of dyspeptics every year. The substance of the Fletcher system is as follows:

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[1] Thompson.

"1. Mastication and insalivation of all food up to the point of involuntary swallowing, the food not to be forced down the throat, but to be masticated until it is mixed with the saliva and goes down by itself; attention to be directed not to the mechanical act of chewing, but to the tasting and enjoyment of the food.

"2. Liquid foods to be sipped and tasted, never hastily gulped down.

"3. Follow instinct. Even if one or more meals are skipped, never eat unless hungry.

"4. The quality of food to be guided by natural taste or selection.

"5. The quantity of food to be guided not by the amount of food offered or by past habit, but largely by instinct. (The theory is that the gastric juice will only act properly when the appetite is healthy, and, consequently, people who feel out of sorts and have no desire for food do harm by forcing themselves to eat.)

"6. When instinct is in doubt use reason. That is, when the appetite is entirely willing to use either of two foods, choose the better and purer foods and those low in proteid in preference to those high in proteid."

In "Medical Gynecology" (Howard A. Kelly) this feature of the Fletcher system, which has been very successfully used in hospitals in functional nervous and gynecologic cases associated with dyspepsia, is cited:

"When eating chew very thoroughly everything that is taken into the mouth (except water, which has no taste) until it is not only liquefied and made neutral or alkaline by saliva, but until the reduced substance all settles back in the folds at the back of the mouth and excites the swallowing impulse into a strong inclination to swallow, then swallow what has collected and has excited the impulse, and continue to chew the remainder, liquid though it be, until the last morsel disappears in response to the swallowing impulse. Never forcibly swallow anything that the instincts connected with the mouth show any disposition to reject. It is safer to get rid of it beforehand than to risk putting it into the stomach."

The terms *indigestion* and *dyspepsia* are used to cover a variety of minor symptoms, such as weight and oppression in the region of the stomach, eructations, flatulence, heartburn, hiccough, loss of appetite, morbid craving for certain articles of food, headache, dizziness, etc.

Pain is a frequent accompaniment of dyspepsia. It is usually of a dull aching character, but occasionally is sharp and severe. When the stomach is diseased undue retention of undigested foods is liable to give rise to irritation and distress.

Distention of the stomach and *intestines* with gas is common —the so-called flatulent dyspepsia. Distention interferes with the free action of the diaphragm. An inflated stomach presses on the heart, displaces it, and interferes with its regularity, causing palpitation and difficulty in breathing.

Personal idiosyncrasy is a powerful factor in the digestibility of food, and there is more than a grain of truth in the oft-heard saying that "What is one man's meat is another's poison." Few, if any, individuals can eat all kinds of food without distress, and the discomfort following the food should serve as a warning for the future. As a rule, fatty, acid, and twice-cooked foods are best avoided by those who are subject to digestive ailments. Sweet foods and insufficiently cooked starches are apt to cause fermentation, with flatulence. Certain combinations of foods are pretty sure to disagree, such as milk and rhubarb, or cherries. It is not always possible by observation to determine which food is causing the trouble, but in many cases it is.

The *quality* and *amount of secretion* is important to know, and also the condition of the stomach. Examinations of the stomach contents are undertaken to determine this.

Test meals are given to assist in determining these conditions, the test meal being, as a rule, preceded by gastric lavage. (For Test Meals, see Appendix.) After a definite time has elapsed from the time the meal was taken the stomach tube is introduced, and a sample of the contents is withdrawn and examined. In this way it is possible to ascertain which of the gastric elements are at fault and the general condition of the mucous membrane and stomach walls.

Hypersecretion is an excessive or too copious secretion of gastric juices. Hyperchlorhydria is an excessive secretion of hydrochloric acid. Experiments have shown that fats exercise a restraining influence on this secretion. The larger the amount of fat, the less the amount of gastric juice. A diet which includes foods such as cream, butter, ripe olives, olive oil, toast, and easily digested farinaceous foods is often prescribed in these cases. Hypersecretion and hyperchlorhydria often occur as the result of disturbance of the nervous system.

Gastric dilatation results in weakening of the walls of the stomach, loss of tone, and general reduction of the propulsive power of the organ. In this condition foods are very imperfectly digested. Frequently, undigested food will remain in the stomach all night and be vomited in the morning with an accumulation of mucus. In such cases fluids are usually restricted and the quantity of solid food kept within strict limits. Farinaceous foods are forbidden. Concentrated foods are used, and predigestion is often necessary. Lavage, massage, electricity, etc., are employed in many of these cases.

Acute Gastritis.—This disease is also known as gastric catarrh or acute indigestion. It is one of the most common disorders, traceable usually to bad methods of dieting, and may occur at any age. Overloading the stomach and the use of indigestible foods that irritate the mucous membrane and decompose are common causes. The disease often occurs in summer as a result of taking food that has partially decomposed, which sets up a process of fermentation. Common examples of these are ice cream and meats or hash. It occurs frequently at the beginning of specific fevers.

The usual symptoms of acute febrile conditions are present, with extreme nausea and eructations. There may be distention of the abdomen and local tenderness. Herpes is often seen. There is usually an increase in the secretion of saliva and a marked increase in mucus.

Management.—In the severe forms where there is acute pain in the stomach vomiting should be encouraged, and, if necessary, emetics given. In most cases a mild purgative, such as castor oil or calomel, should be given. In cases accompanied by eructation of sour fluid soda bicarbonate and bismuth are often given. The stomach should have complete rest. Soda water and ice cream are frequently permitted.

Peptic Ulcer.—This is a round, perforating ulcer which occurs in a limited region as a result of nutrition disturbance. It follows usually because of superacidity of the gastric fluid, which gradually destroys the mucous membrane. Two forms of peptic ulcer are recognized—the gastric and the duodenal.

Gastric ulcers occur with greatest frequency between the ages of fifteen and thirty. They occur often in persons whose work causes constant pressure on the stomach, such as the workman who always leans over the edge of a desk; the shoemaker who presses the last against the abdomen; and persons who constrict their waists too much by tight clothing. "As a rule, ulcers are single, yet there may be many, even from five to thirty. When they heal they leave a scar, as a rule, and this scar contracts with results which may be very serious if the ulcer was large. Near the pylorus it can almost shut off this aperture, and near the middle of the stomach it can contract the stomach, considerably, giving rise to the so-called "hour-glass stomach." The ulcer may open a large blood-vessel with the result of fatal hemorrhage." (Emerson.)

Perforation may occur either into the peritoneal cavity or the pleura. Adhesions may form between the stomach and adjacent tissue, or a fistulous communication with the colon, or a gastroduodenal fistula may result.

Hemorrhage occurs in about half of all cases. Blood may be passed in stools or vomited. Pain is always present and varies from the slight gnawing sensations to intense paroxysms. Anemia is mentioned as a predisposing cause.

Management.—Complete rest in bed; careful dieting; rectal feeding when the stomach is greatly irritated; bland, easily-digested fluid food at stated intervals when it can be retained are the rule. Hot fomentations or mustard to the stomach and to the abdomen are useful. Ice-caps are employed in cases of hemorrhage in preference to hot applications. Adrenalin, chlorid, or ergotin are often resorted to in cases of hemorrhage. As a rule, total abstinence from solid food is insisted upon till all traces of blood have disappeared from the stools. Bismuth, nitrate of silver by mouth, and morphin hypodermically are often used. A dose of the artificial preparation of the Carlsbad salts is often given every morning. (Sulphate of sodium, 50 gr.; bicarbonate of soda, 6 gr.; chlorid of sodium, 3 gr.) Olive oil is frequently used.

Vomiting is a symptom which is common but the causes of which are far from being clearly understood. In recent years a good deal of study has been given to the subject. It is a symptom which a nurse sees frequently and a doctor sees comparatively seldom. "The real source of some of the most violent gastric symptoms is not in the stomach at all but is in the nervous system." (Emerson.)

Persistent Vomiting.—In many diseases of the digestive tract, as well as in other diseases, persistent vomiting occurs. For relief from this various measures are tried, among which are:

Mental and physical quietness.
Keeping head low.
Dorsal position, with pillow under the knees.
Sometimes a change to half-sitting position.
Washing out the stomach.
Small sips of hot water or hot tea.
Champagne in small, frequent doses.
Bits of ice to swallow.
Ice-caps or mustard plaster over the stomach.
Bicarbonate of soda (10 to 20 gr.) in hot water.
Slow irrigation of the rectum.

CHAPTER VIII

DISEASES OF THE DIGESTIVE SYSTEM (Continued)

The work of digestion which was begun in the mouth is completed in the intestines. After the partially digested food (chyme) has passed from the stomach through the pylorus into the intestines it immediately comes in contact with two important digestive fluids—bile and pancreatic juice. The bile is conveyed from the liver by means of the bile-duct, and the pancreatic fluid from the pancreas through the pancreatic duct, both entering the duodenum at about the same point. These fluids, together with the secretions from the intestinal glands (and the juices which have already been mingled with the food in its passage through the mouth and the stomach) complete the work of the digestion. The action exerted on food by each of these juices has been stated in previous lessons.

Chyle.—In the small intestines the appearance of the food-contents are changed by the action of the bile and pancreatic fluid. The fats become emulsified, and the term chyle is applied to the emulsified mass. The passage from the small intestine into the large intestine is guarded by the ileocecal valve, which prevents regurgitation of the intestinal contents which have passed through. During the passage through the intestinal canal more or less of the nutritive elements of the food have been absorbed into the blood, the indigestible residue being carried onward by peristaltic movements.

Constipation is an abnormal retention of feces. It may be acute or chronic. It is often a family peculiarity. In many cases it alternates with diarrhea, and frequently accompanies neurasthenia or chronic affections of the liver and stomach. Sedentary habits predispose to it. In many cases it has a close relation to diet. Thompson gives the following list of dietetic causes which may produce or influence the condition:

1. Insufficient quantity of solid food. There may be too little bulk of waste to excite normal peristalsis.

2. Too highly concentrated or nutritious foods, which are almost completely absorbed. This is a frequent cause in cases in which an exclusive diet is used.

3. Insufficient fluids. The intestinal contents require a certain amount of fluid. If this is withheld the fecal mass hardens and is difficult to propel. Also, when there is little fluid absorbed by the blood the digestive juices and body fluids are reduced in amount and quality.

4. Astringent food or drinks check the mucus and other secretions and tend to constipation.

5. Indigestible food may be too hard and bulky to move

through the bowel easily, or may cause abnormal fermentation, and thus hinder peristalsis.

6. Lack of digestive fluids or serious alteration in quality will influence digestion and peristalsis.

7. Irregularity in diet or in the intervals of taking food, imperfect mastication, and hasty eating.

8. Overeating may cause temporary obstruction, the accumulation of waste matter being greater than the muscles have the power to propel.

9. Imperfect nerve stimulation and enfeebled intestinal muscles conduce to constipation.

10. Lack of exercise and too little oxygen result in sluggish circulation and tend to diminish general functional activity.

Symptoms.—Apart from the local symptoms, debility, general lassitude, and depression occur. In cases of chronic insanity constipation is apt to increase irritability and tends to excite acute or violent symptoms. In other cases, occasional localized pain and fever resembling appendicitis or peritonitis occur. Protracted constipation is very likely to lead to diarrhea, the fecal mass acting as a local irritant and causing frequent small stools, while the fecal mass higher up in the bowel remains unmoved, though a channel may be bored through the impacted mass.

What to Do for Constipation.[1]—1. Eat slowly; chew the food well.

2. Drink plenty of water; a tumblerful before each meal, and more on rising and on going to bed.

3. Keep a regular time for going to stool each morning.

4. Exercise in the open air as much as possible. Practice exercises that will strengthen the muscles of the abdomen.

5. *Diet.*—The following foods are especially useful: Apples, oranges, pineapples, prunes, figs, dried stewed peaches, cabbage, onions, spinach, "greens," tomatoes, rhubarb, butter, olive oil, coarse graham bread, rye bread, oatmeal, wheaten grits. Molasses, honey, and ginger-bread are useful for children. Foods to be avoided because they cause constipation are: Milk, cheese, eggs, sweets, pastry, pickles, fried foods, and

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[1] From leaflet issued by Cornell University Medical Clinic.

tea. It is better to eat fruits, green vegetables, and coarse cereals than much meat.

6. It is better to cure constipation by careful dieting than to be always taking pills or medicine.

Intestinal Auto-infection.—A condition of toxemia which results from the absorption of poisonous substances produced in the alimentary tract has been termed auto-intoxication or auto-infection. It does not include ptomain or food poisoning, but may occur when foods are perfectly wholesome. These substances when the digestive functions are normal will be readily eliminated. When these poisons are retained in the system owing to defective elimination the circulatory, nervous, digestive, and eliminative systems are all disturbed, giving rise to a variety of symptoms and predisposing to nervous, skin, and blood diseases. Slight fever is commonly present. The management of these cases is largely hygienic and dietetic.

Catarrhal Enteritis (Diarrhea).—The causes of this disease are many. Among the common causes are improper food, overeating, toxic substances resulting from decomposition of food, sudden changes in the weather, especially a fall of temperature in autumn or spring. Excessive heat of summer is more likely to affect children than adults. Changes in the proportion of fluids in intestinal secretion may cause diarrhea. An excess of bile may give rise to what is popularly known as "bilious diarrhea," or too little bile or absence of pancreatic fluid in the intestines may cause a certain form of intestinal catarrh. Nervous and emotional disturbances have in certain individuals a decided influence on the intestinal tract.

Secondary causes of catarrhal enteritis are dysentery, cholera, typhoid fever, septicemia, tuberculosis, and other infectious diseases. A catarrhal condition is common in hernia, intussusception, cancerous ulceration, also in certain diseases of the liver and heart that affect the circulation, and in cancer, Bright's disease, and other chronic ailments.

In *acute cases* all solid foods should be avoided, and milk and water taken in small quantities, also ice if vomiting is present. If it is believed the attack is due to the presence of toxic or indigestible food, to get rid of the offending substance is one of the first steps. Castor oil is a good purgative to use in such cases. When pain is severe a small enema of about 2 ounces of starch with 20 drops of laudanum is one of the most valuable remedies.

In *chronic cases* special attention should be paid to the condition of the stools. The amount of mucus, occurrence of parasites or pus, and evidences of digestion or indigestion should be carefully noted. Rest in bed and a restricted diet—one which leaves the smallest possible residue—are often prescribed and used successfully in cases of long standing. Irrigation of the colon is helpful in these cases, the starch and laudanum injections or nitrate of silver solutions being used.

FIG. 30.—Thread-worms—oxyuris vermicularis, natural size (Kerr).

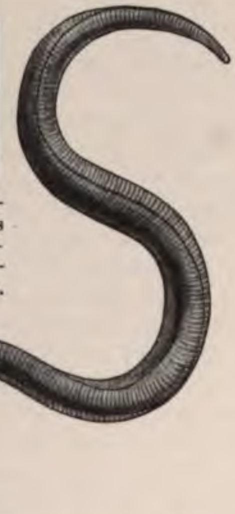

FIG. 31.—A round-worm, ascaris lumbricoides (Kerr).

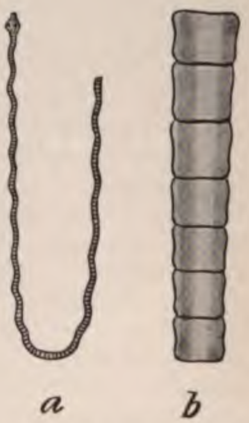

FIG. 32.—Tapeworm: (*a*) Head and first segments; (*b*) middle segments (Kerr).

All such patients should rest for an hour or more after meals. Cold baths, fresh air, avoidance of meats, bulky vegetables, fruits, and sugars are all helpful in overcoming the condition. Milk, eggs, toast, and well-cooked, bland, unirritating, starchy foods are best in this condition.

Mucous colitis (also known as membranous enteritis and mucous colic) is an affection of the large intestine, characterized by the presence in the stools of tenacious mucus or a stringy membrane. There are various grades of severity in this disease. In many cases paroxysms of pain occur with tenesmus, with the passage of flakes or strings of mucus and occasionally of definite casts of the bowel. Constipation is usually present. Abdominal pain is present in less than half the cases. An intestinal toxemia is a common accompaniment and aggravates the nervous condition which so frequently exists. It has been noted that the diseases almost always occurs in neurasthenic subjects, and may occur in men or women or children. Recurrences are frequent. Mental emotion, worry or excitement or indiscretions in diet often cause a recurrence which may last for a few days or weeks.

Irrigations are helpful in the acute stage of the disease. Olive oil by mouth and combined water and olive oil injections, using a yolk of an egg to assist in the emulsion, are often used. In fact, olive oil is one of the most useful remedies in this disease.

The *diet* should contain plenty of cream, butter, fat, etc., plenty of fresh fruits and vegetables, coarse breads, and cereals. The main reliance, however, must be on the improvement of the neurasthenic condition by the ordinary means—rest, hydrotherapy, change of scene, and avoidance of worry and care as far as possible.

Intestinal Parasites.—The most common varieties of parasites found in the intestinal canal are the tapeworm, round-worm, and thread-worm.

Tapeworms are commonly introduced into the system with meat, usually pork which has not been fully cooked. Their presence, as a rule, is not suspected till a portion of the worm is passed from the bowel. It is highly important to watch stools carefully and find out if the head, which is the smallest part of the worm, is passed. Unless the head is expelled the worm will grow again.

Round-worms and *thread-worms* occur mostly in children. Santonin is a favorite remedy. The thread-worms are found in the colon and rectum and often cause much local irritation.

Salt solution injections may be used to dislodge them. Cleanliness about the vulva and rectum is quite important.

Hook-worm disease is common in the Southern States and in tropical Europe. It is caused by the uncinaria or hook-worm in the intestines. Anemia, stunted growth, and general disinclination to work are characteristic features. Perversion of appetite is common. The parasite may enter the system through the mouth or through the skin. Thymol, male fern, and betanaphthol are much-used drugs. The stools of patients contain the infectious agent. Preventive measures are directed to proper disposal of the feces and careful attention to safety of food and water.

Appendicitis.—The surgical treatment of appendicitis as it concerns nurses is pretty generally understood and may be omitted here.

The cause of appendicitis is often of bacterial origin. Osler mentions in his observations that persons who are obliged to lift heavy weights seem more prone to the disease; that a fall or blow or injury often precedes an attack; that indiscretions in diet are often followed by appendicitis. The too free indulgence in peanuts, soft-shell crabs, etc., is credited with being the exciting cause in a good many cases.

"Both overeating and overdrinking may indirectly cause appendicitis, as well as the consumption of too highly seasoned food, for these factors provoke catarrh of the intestine, distending the bowel with feces and gas, and making it easy for the catarrhal process or for bacteria of various sorts to enter the appendix and set up local inflammation there. The recurrent cases are more apt to be excited directly by overeating and improper food. In recurrent cases the patient should be cautioned to eat moderately and avoid all coarse or hard food, such as grits, coarse oatmeal, tough meats, fibrous vegetables, the skin of fruits or potatoes; in short, everything likely to overload the intestines with accumulated waste." (Thompson.)

Symptoms.—Sudden pain in the abdomen, usually on the right side; fever, nausea, vomiting, usually constipation, tenderness or pain on pressure in the appendix region, are among the common symptoms.

Rest for the body and for the stomach and intestines, as far as possible, are important features in the early treatment. The advice of a physician or surgeon should be sought at the earliest possible moment when such a condition is suspected. The physician is often called too late, never too early, when appendicitis has to be dealt with. Ice to the abdomen is usually a safe application in emergency till the physician arrives. Purgatives should never be given by a nurse when there is reason to suspect that the appendix is the seat of the trouble.

A *hernia* is the protrusion of a loop or knuckle of an organ or tissue through an abnormal opening.

Inguinal hernia consists of the passage of part of the bowel or omentum through the inguinal canal.

Femoral hernia consists of a protrusion of intestine or omentum through the femoral canal.

Strangulated hernia exists when the contents of the sac are constricted so that intestinal function is impaired.

Intestinal obstruction in adults occurs most frequently from strangulated hernia.

Symptoms of intestinal obstruction are constipation, pain in the abdomen, and persistent vomiting. The vomited matter at first is of a bilious character, later the color changes to a brownish black, and there is a distinctly fecal odor to it. Distention of the abdomen usually, but not always, occurs. Fever may be absent, but the pulse is rapid and feeble, with other general symptoms of collapse.

Intussusception is a common cause of obstruction in children. (See page 279.)

In cases of recent obstruction, distention of the bowel by injection of large quantities of water, combined with some laxative drug, is usually tried in the hope that the condition may right itself. In these cases the knee-chest position is often used in giving the injections. Surgery usually has to be resorted to. A point of importance to be noted by the nurse, both before and after operation, is whether or not gas is expelled by rectum. This will often help to determine whether or not an operation is required, for usually where gas finds a passage fecal matter in time will pass, and the obstruction be relieved without surgical interference.

Biliousness is a term used very frequently to indicate functional disorder of the liver accompanied by oversecretion of bile and vomiting.

The cause is usually eating too much food, too rich food, or badly-cooked food, or too free indulgence in some favorite beverage or food. A family tendency to biliousness occasionally exists.

Speaking of overeating, Thompson says, "The surplus fund of nutrient material unused is stored up in some form. When a certain amount has been thus disposed of—the capacity for storage varying greatly in different persons—an undesirable balance remains against the feeder, and in young people is mostly rectified by a bilious attack. This relieves the system for a month or six weeks, when the process may be repeated."

The condition is preventable. If not corrected it is apt to lead to more serious ailments.

Gall-stones (Cholelithiasis).—The formation of gall-stones is due to a change in the character of the bile, which may be the result of inflammation of the mucous membrane of the gall-bladder and bile-ducts. The inflammation is said to be the result of bacterial invasion. Medical writers have stated that women are more liable to this affection than men, and that conditions which favor stagnation of bile in the gall-bladder predispose to the formation of stones. Among these may be mentioned corset-wearing, enteroptosis, occupations requiring a leaning forward position, lack of exercise, sedentary occupations, overeating, and constipation. There are usually a number of stones, varying in size from a pea to a small egg.

The presence of gall-stones is usually not suspected until an attack of biliary colic occurs, which is an excruciating pain caused by the passage of the gall-stone into the bile duct or into the bowel. Small stones are sometimes passed without marked pain, but often the suffering is so intense that the patient rolls about in agony. The temperature may rise to 103°F. or higher, and vomiting, profuse perspiration, and heart depression accompany the attack.

In all suspected cases the nurse should watch carefully for the passage of stones. When a stone is marked by contact with another stone it is said to be "faceted." The nurse should carefully examine the stone for these marks, which indicate the presence of other stones in the gall-bladder. Usually these cases are treated by surgical intervention, but often several attacks of biliary colic of varying duration precede the decision to submit to the operation. The treatment in these cases prior to operation is directed usually to securing relief of pain. Hot baths, stupes, morphin, and chloroform are all resorted to in severe cases. The patient is given a carefully selected diet in which fats and sweet foods are avoided. Copious drinks of alkaline mineral waters are recommended. In many cases the itching of the skin is intolerable, in which case dusting of the skin with a powder made of an ounce of starch, a dram and a half of camphor, and half an ounce of zinc oxid is recommended.

Cirrhosis of the liver, a thickening of the connective tissue of the organ, may result from a variety of causes. The most common cause is alcohol. Infectious cirrhosis may result from syphilis. Other causes are chronic congestion of the blood-vessels in heart disease, or chronic obstruction of the bile-ducts. There are several varieties of this disease.

Alcoholic cirrhosis occurs most frequently in men of middle age who have been addicted to alcoholic liquors.

Rickets and indigestion are said to predispose to the disease in children.

Jaundice is not always a symptom, though the skin usually has a sallow hue. Fever may or may not be present. Dropsy is one of the common features, and great quantities of fluid sometimes accumulate. In certain forms of cirrhosis of the liver hemorrhages are frequent. Many cases have hemorrhages from the gums, and purpura hemorrhagica is commonly associated with this disease. The spleen is usually greatly enlarged. The disease is incurable. Treatment is directed to securing the utmost comfort for the patient. Tapping is resorted to at frequent intervals and affords great relief. There is ordinarily little pain throughout the course of the disease.

Diseases of the Peritoneum.—Acute general peritonitis is usually due to bacterial invasion. It may occur in a person previously healthy, but is most frequently a complication or result of some other disease. Child-birth and surgical operations in the abdominal regions are common causes, also gonorrheal infection and perforating ulcers of the stomach and bowels.

Symptoms.—Among the early symptoms are severe abdominal pains, chills, and fever. Pain is so intense that instinctively the patient [illegible] ve the tension of the abdominal muscles by ly [illegible] ack and drawing up the knees. Often the weig [illegible] dclothes is so great that they have to be supp [illegible] ed-cradle. Rapid pulse, vomiting, hiccough, anx [illegible] on, and great prostration are features of the condit [illegible]

Management.—As in treatin [illegible] ammation in other parts of the body, rest is one of the first principles. This is frequently secured by the use of opium, which quiets the bowels, relieves pain, and induces sleep. Hot fomentations in which laudanum and turpentine are used are often prescribed. These tend to relieve the distention from the accumulated gas in the intestines. Ice-caps or compresses wrung out of ice water are sometimes used in early stages. Nursing is of the utmost importance in this disease, and care in recording the symptoms also quite important, for on these the physician will often base his treatment. The respiration and pulse are more important, and to be watched more carefully, than the temperature. A pillow should be placed under the knees, and the patient allowed to lie in the position that gives the greatest relief. Nutrient enemata are often necessary. The distention is difficult to overcome. The nurse should be careful to record the passage of gas.

Hysteric peritonitis is a condition which may so closely resemble the real peritonitis that the most skilful physicians have been deceived. Every symptom may be present—vomiting, diarrhea, difficulty in voiding urine, tympanites, fever, and even the characteristic position assumed in lying may be seen in hysteric subjects. The distention of the abdomen is sometimes enormous, and the tension for the time causes severe pain. In hysteric subjects, with no apparent cause for a general peritonitis, this condition may be suspected.

Tuberculous peritonitis is a not uncommon condition and may be general or localized. When it is general a matting together of the abdominal viscera by adhesions occurs, which causes pain and an effusion of fluid into the abdomen. These cases are often treated by the use of a general tonic and attention to general health. Absorption of the fluid by the tissues and separation of the adhesions is desired, and to promote this iodid of potassium internally and blisters or counterirritation externally are frequently used. Surgery is resorted to in many of these cases and sometimes gives favorable results.

CHAPTER IX

DISEASES OF THE URINARY ORGANS

The urinary organs include the kidneys, ureters, bladder, and urethra.

The *kidneys* are situated at the back of the abdomen, on each side of the lumbar vertebræ.

The *ureters* convey the urine to the bladder. As the ureter approaches the kidney it expands and forms a basin-like cavity, known as the pelvis of the kidney. The ureter subdivides into several portions, and from these a number of smaller tubes lead into the tissues of the kidney. Projecting from the outer border of the kidney, and connecting with the outer end of these tubes, is a tuft of capillary blood-vessels.

These *renal tubes*, or tubules, are lined by minute cells which are constantly at work removing solid impurities from the blood. The kidneys are, therefore, made up of a large number of small tubes, one end of which opens into the upper extremity of the ureter and the other end forms a small chamber in which a clump of capillary blood-vessels are situated.

The *functions of the kidneys* are twofold. They collect from the circulation daily from 40 to 50 or more ounces of water. They also remove solid waste products which have resulted from the working of the human machine. These waste products are the ashes of the human body, in which combustion is always going on. If the organs are to carry on their work without hindrance the ashes from the human fire must be constantly removed.

When inflammation occurs in the kidneys the capillaries of the organ become overdistended, and blood-cells may be forced outside the vessels. These may pass into the tubules and cause blood in the urine.

Inflammation also acts disastrously on the cells which line the tubules—the cells whose work it is to remove solid impurities from the blood. The inflammation may cause death of these cells or a diminution of their working ability. The tubules may become obstructed by inflammatory products, and the function of the whole organ for the time is impaired. A large proportion of the diseases of the urinary system are of inflammatory origin.

URINE CHART

Name..
Bladder emptied........o'clock..............
Twenty-four-hour amount due at.............

Date.	Hour.	Amount.
	Total,	

Explanation.—Bladder emptied (give hour and date). Twenty-four-hour amount due at (give hour, A. M. or P. M.).

Albuminuria, or the presence of albumin in the urine, may exist without any serious organic change in the kidneys. "It indicates either a simple mixture of albuminous matters, as blood with the urine, or a morbid state of the kidneys permitting albumin to pass from the blood." (Dorland.)

Albumin is not a waste product. It is one of the important tissue-building elements in food, and normally is not found in the urine. When it exists there it simply shows that the cells of the kidneys are for some reason failing to do their work properly, since they are allowing some of the most valuable elements of food to be wasted and pass out in the urine. Not every person who has albumin in the urine, however, has nephritis or inflammation of the kidneys.

A *dietetic albuminuria* may be produced by a too free use of certain foods.

A *febrile albuminuria* is quite common, and occurs occasionally in typhoid fever, pneumonia, diphtheria, malaria, and tonsilitis.

A *neurotic albuminuria* is often found associated with nervous affections.

Cardiac albuminuria is due to valvular disease.

Cyclic albuminurio occurs occasionally during the adolescent period. It is more common among boys than girls, and appears at certain times during the day.

Physiologic Albuminuria.—Numerous writers hold that there is a physiologic albuminuria which may follow muscular work, violent emotions, cold bathing, digestive disorders, etc. The gouty albuminuria found in old people with an excessive secretion of urea is of this type.

Functional Albuminuria.—The albuminuria so frequently associated with pregnancy is often of this class, though in many cases changes in the tissues of the kidneys occur. Albumin is also frequently found in the urine after chloroform and ether anesthesia. Opinions differ as to the seriousness of these conditions. Much depends on other symptoms and conditions which may exist in connection with albuminuria. Life insurance companies place considerable stress on the existence of albumin in the urine in applicants for life insurance. Osler says, regarding this point, "As the function of the physician is to protect the interests of the company, he should reject all cases in which albumin occurs in the urine."

Management.—Many of the transient mild cases require no special treatment beyond a little regulation of the mode of life. In other cases, the treatment includes careful dieting and the stimulating of the bowels and sweat glands, thereby lessening the work of the kidneys.

Hygienic Suggestions.—The following printed instructions given to patients visiting the Cornell University Medical Clinic give useful instructions regarding the hygienic management of patients suffering from chronic kidney disease:

Directions for Patients with Kidney Disease.[1]—*Remember*, with good care and by obeying instructions you may live many years with little discomfort.

INSTRUCTIONS

I. *To Avoid Taking Cold.*—(1) Wear flannel underclothes all the year, warmer in winter. (2) Keep the feet dry, wear warm socks. (3) Do not get wet or chilled. (4) Keep in the open air and sunshine all you can. (5) Keep your rooms at an even temperature, not too hot.

II. *To Relieve the Work of the Kidneys.*—(1) Take a hot sponge bath every night at bedtime to keep open the pores of the skin. (2) Keep the bowels open; have at least one good passage every morning.

III. *Occupation.*—(1) Get work in which you never have to lift or strain, such as tailoring, operating, etc. It is harmful to lift heavy weights, walk too fast, stoop, or climb long stairs. Rest as much as possible, with not less than eight hours sleep. Do not worry or get too tired.

IV. *Diet.*—*Dairy Foods.*—Milk, cream, butter, and a small amount of cheese. *Cereals.*—Rice, hominy, Indian meal, barley, cracked wheat, oatmeal, cream of wheat, etc. *Breads.*—Whole wheat, graham, rye, corn bread. *Vegetables.*—Potatoes, beets, carrots, onions, turnips, squash, lettuce, spinach, tomatoes, peas. *Fruits.*—All the fresh fruits except bananas. *Liquids.*—Drink no alcoholic liquors of any kind, not even beer. They are all absolutely poisonous to anyone with kidney disease, and are likely to cause dropsy, shortness of breath, or convulsions, and destroy your eyesight, besides shortening your life. Do not drink large quantities of water or other liquids.

Avoid all red meats, and eat eggs only in moderate quantities. *Avoid* all salted or dried or canned meats and vegetables.

Acute Nephritis.—In this disease the onset is usually sudden, and one of the first symptoms to be noticed may be dropsy or a puffiness around the eyelids or on the backs of the hands or in the limbs. There is usually some elevation of the temperature, sometimes vomiting and a large amount of albumin may be in the urine. Blood may also be present in the urine. Suppression of the urine may follow and speedily cause death. In all such cases there is less than the normal amount of urine secreted, and the urine contains less urea, for the inflamed kidney is unable to properly do its work. Most of these cases recover. Many of them improve up to a certain point, but the inflammation does not entirely subside and the condition becomes chronic. (See Nephritic Diets.)

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[1] William Hills Sheldon, M. D., in Medical Record.

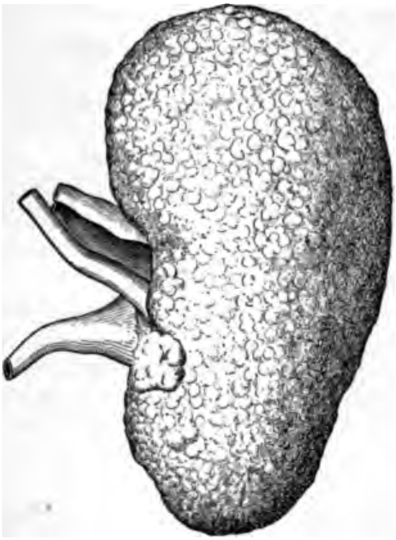

FIG. 33.—Chronic interstitial nephritis; granular kidney (Orth).

Uremia is a toxemia developing as a result of impaired kidney action. It is in reality a form of blood poisoning, the system being poisoned by its own waste products. In all such cases the amount of urine should be carefully measured and recorded. This condition sometimes develops following a very slight operation.

Drowsiness, sometimes vomiting, persistent headache, a very small quantity of urine, or absence of urine (anuria), are prominent symptoms. Occasionally convulsions occur. The drowsiness may deepen into coma and death may result. A milk diet, saline purgative, and hot-air baths, or hot baths or packs, with sometimes injections of salt solution, are the important features of the treatment.

Bright's disease, or **chronic nephritis,** may begin insidiously and progress very gradually, or may result from an attack of acute nephritis. In this disease there is a slowly progressive waste of kidney tissue, a fibrous or scar-tissue taking its place. The organs become shrunken in size, and, as much of the kidney is destroyed, the work which is normally done by the kidneys is not properly done.

Marked changes in the heart and circulatory system occur. The walls of the arteries become thickened and hardened. The heart becomes enlarged. The brittle arteries rupture easily, and many of the cases die from cerebral apoplexy or hemorrhage into the brain.

Floating Kidney.—The kidney is held and firmly fixed in its normal position by a fatty capsule which surrounds it, the peritoneum, and blood-vessels. Under certain circumstances one or both kidneys become movable. The condition is found in many cases of enteroptosis (dropping of the viscera). It may be caused by tight lacing, the weight of heavy skirts, by lifting heavy weights, by injury, and occasionally develops after repeated pregnancies, owing to relaxed abdominal walls.

Management.—In many cases a movable kidney causes no special discomfort. Osler says that far too much stress has been laid on it in recent years, and that many symptoms attributed to a movable kidney were due to neurasthenia or dyspeptic disturbance. There are cases in which acute attacks of abdominal pain, nausea, vomiting, fever, and collapse occur, but these are not common.

Much comfort is sometimes experienced from a properly adjusted bandage and pad, which supports the organ in its proper position.

Nephrorrhaphy, or the anchoring of the kidney by stitching, is an operation frequently performed for relief of this condition. The successful outcome of such operations depends considerably on the nursing. The operation may fail from a variety of causes, but among the causes of failure due to postoperative influences are the following, enumerated by Dr. Goelet. To know them should be sufficient to cause a nurse to guard against them as far as possible, and as far as she has any responsibility:

1. Excessive vomiting or coughing shortly after operation following anesthesia may loosen the kidney from its fresh attachment.
2. Permitting the patient to turn on the opposite side soon after operation may cause detachment.

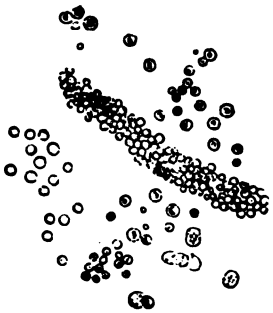

FIG. 34.—Red blood-corpuscles and a blood-cast of a uriniferous tubule (Eichhorst).

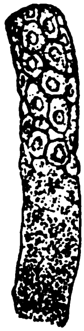

FIG. 35.—Epithelial cast of a uriniferous tubule (von Jaksch).

3. Permitting the patient to assume the erect position soon after operation.
4. Neglect to adjust proper support for lax abdominal walls after the operation when the patient gets out of bed.
5. Too early resumption of the corsets or their improper adjustment.
6. Permitting too early such exertions as would put unusual strain on the freshly attached kidney. The patient should be permitted to regain her strength before she resumes her accustomed duties.
7. Neglect to correct after operation the derangement of the digestive apparatus and other conditions caused by prolapse.

Renal calculus (**nephrolithiasis**) is the formation in the kidney or its pelvis of concretions by the deposit of certain of the solid constituents of the urine.

Oxaluria is the presence of an excessive amount of oxalic acid, or of oxalates, in the urine.

Uric acid and oxalic acid are said to be chemically very closely related. Many mild cases of diabetes develop oxaluria. Patients who have nervous dyspepsia, chiefly those having hyperacidity of the stomach, show a tendency to develop oxaluria.

The preventive treatment of urinary calculi concerns itself chiefly with means to avoid an excess of uric or oxalic acid being deposited in cases which seem predisposed to this disease. It is to a considerable extent a dietetic problem, and foods are considered in their relation to these elements. (See Diet for Oxaluria.)

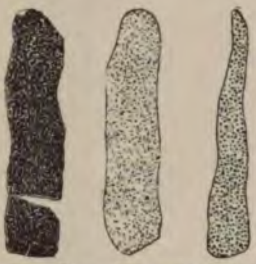

Fig. 36.—Granular casts of the uriniferous tubules (von Jaksch).

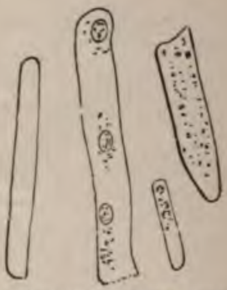

Fig. 37.—Hyaline casts of the uriniferous tubules (Vierordt).

Diet in Kidney Disorders.—In all kidney disorders proper dieting is of primary importance. The management of the fluid question also needs careful consideration. In some forms of kidney disorder copious drinking of water is an important part of the treatment. In other disorders it is necessary to limit the amount of fluids. During the stages of active inflammation in acute nephritis, when the kidneys are not excreting abundantly, it is not considered wise to force the organ to eliminate, when it needs rest as far as possible, so that it may be able to resume its functions. An important point in the diet of many nephritic cases is the reducing to a minimum the quantity of common salt in the food. It has been found that in such conditions "the kidneys have special difficulty in excreting chloride of sodium. The salt accumulates in the tissues and attracts a considerable amount of water, which is thus held, as it were, by the chlorides in solution. This in itself is a cause of dropsy, and tends to increase that condition already existing and due to the action of other causes. The indication, therefore, is to remove salt as much as possible from the diet. For this purpose meats should be boiled in order that the salts may be extracted from them. Eggs are given without salt. Potatoes, grains, and leguminous vegetables contain very little salt. Spinach and cauliflower contain too much. Bread should be specially prepared without salt." (Hall.) See Salt-free Diet List.

Glucosuria.—Glucose is grape sugar, or dextrose. Glucosuria (or glycosuria) is the presence in the urine of an abnormally high proportion of glucose.

Hematuria is the presence of blood in the urine.

Lithemia (lithuria) is an excess of uric acid or of urates in the blood.

Pyelitis is inflammation of the pelvis of the kidneys. Abscesses frequently form, causing a discharge of pus in the urine.

Renal casts are microscopic bodies found in the urine of persons affected with disease of the kidneys—so called because they are formed of matter deposited in and preserving the outline of the renal tube.

The specific gravity—the weight of urine as compared with water is an important test which nurses frequently are required to make. Taking the specific gravity of water as 1000 the specific gravity of urine normally is between 1.012 and 1.024 averaging 1.020.

Pigments give to the urine its peculiar amber color. In health the color varies considerably according to the amount of fluid taken. The specific gravity is lower in pale copious urine, deficient in urea.

Abnormal Constituents.—In infectious diseases, the bacteria causing the disease may be found in the urine. Besides blood, pus, bile, sugar, albumin, etc., already referred to in urine, the drugs which cause poisoning may often be found in it. In suspected cases of poisoning the urine should be saved.

Examination of Urine.—There are a few of the simpler tests used in examining urine with which every nurse should be familiar.

The inspection of urine includes the noting of the quantity, color, transparency, specific gravity, reaction, odor, and the presence or absence of a deposit.

The *heat and nitric acid test* is one commonly used. Take a test-tube, pour into it urine to the depth of about 1 inch and let it boil. If either albumin or earthy phosphates are present, the urine will appear cloudy. If cloudiness is due to phosphates, the addition of a few drops of nitric acid will clear it. If albumin is present the nitric acid will cause the albumin to precipitate so that it is plainly visible.

The *cold nitric test* is as follows: Into a clean test-tube pour nitric acid to the depth of a half inch. Slant the tube and from a pipet pour down gently a few drops of urine. If albumin is present a white ring appears where the urine joins the acid.

To *test* for the presence of sugar a fluid known as Fehling's solution is sometimes used. This fluid is a deep blue. A small amount is boiled in a test-tube to make sure of its reliability, as it decomposes if kept for some time. On boiling its color should not change, and there should be no precipitate when it is boiled diluted with water.

If the solution is pure, add a little of the urine; boil the mixture. If sugar be present, the solution changes color, becoming yellowish and finally red. The change in color is due to the action of the sugar on the copper contained in the solution.

CHAPTER X

CONSTITUTIONAL DISEASES

No study in recent years has been attended with more satisfactory results than the study of metabolism and of the various conditions which interfere with this physiological function.

Metabolism is the change produced in a substance by the action of living cells upon it. It is the process by which living cells of the body incorporate the matters obtained from food into a part of their own bodies. Metabolism may be either constructive or destructive.

Anabolism, or constructive metabolism, is the change of matter from a lower to a higher state of organization, especially conversion of matter into protoplasm.

Catabolism, or destructive metabolism, converts matter, especially protoplasm, into a lower state of organization, and ultimately into waste products.

A hormone "is a chemic substance produced in an organ, which being carried to an associated organ by the bloodstream excites in the latter organ, a functional activity." (Dorland.)

The process of metabolism is dependent on the proper functioning of a variety of glands and organs which exercise a decided influence on each other and on general health.

"*The essential of a gland* is a surface more or less involuted, provided with epithelial cells containing granules of the substance to be secreted, but in the typical glands, of the body, this simple arrangement has become more complicated, and the epithelial cells open onto small tubules, which in turn open onto larger ones, until they all empty into one main duct or channel. The salivary glands with their secretion, the saliva, form a good example.

[1] "There are also certain structures which resemble these glands in their general characteristics and in their type of cell, but which have no secreting ducts or tubules, and which are known as the ductless glands."

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[1] Grant Campbell, M. D.

Ductless glands.—"The structures usually included are the thyroid, the parathyroids, the suprarenal capsules, the pituitary bodies and the thymus. It is believed that these ductless glands each manufacture and pour directly or indirectly into the blood-stream, some substance or substances which are of service, either by supplying a need or by destroying other substances which are needless or harmful, and that although they may have to some extent the power of replacing one another, all are needful for perfect health. The ductless glands act on other tissues at a distance by means of substances termed hormones which are conveyed to the cells for which they are destined, by means of the blood-stream. These hormones have the power of exciting a definite form of chemical activity on the cells they act upon or on the other hand, they may inhibit or control this activity of these cells."

"*The normal metabolism* of the tissues in health is maintained at its proper level by an adequate supply of hormones from all of these glands. We do not know in what form these hormones are conveyed by the blood-stream but we do know that in health the blood-stream does transmit them efficiently."

The thyroid gland lies in front of the trachea and above the sternum, and consists of two lobes joined across the trachea by a narrow band. The blood-supply of the thyroid gland is very rich.

Myxedema.—While much remains to be found out regarding the action of these glands, certain facts have become well known. "If the gland is removed or destroyed the person begins to gain weight; the skin becomes dry and thick; and under it gathers a layer of mucilaginous tissue; the hair dries and falls out; the pulse rate falls; the expression of the face becomes stolid; the mind becomes duller, the patient more irritable, until if the disease progresses helpless idiocy results. This condition is known as myxedema from the condition of the skin." (Emerson.)

In children occasionally the gland is absent or unable to do the work required of it or loses its function early in life. The child does not develop normally and is often mentally defective. This condition is called cretinism.

Thyroid Extract.—The discovery that the internal secretion of the thyroid gland can be supplied to patients by the use of the thyroid gland of animals either fresh or in dried powder form, has been one of the brilliant medical advances in later years. Sir William Osler says: "That we can to-day rescue children otherwise doomed to helpless idiocy, that we can restore to life the hopeless victims of myxedema, is a triumph of experimental medicine. The results as a rule are most astounding, unparalleled by anything in the whole range of curative measures. Within six weeks a poor, feeble-minded toad-like caricature of humanity may be restored to mental and bodily health."

It is known that one of the important ingredients of the internal secretion of the thyroid gland is iodine, and some iodine preparations have given excellent results in treatment of the conditions cited.

Hypothyroidism or diminished thyroid function is a condition not unusual. The gland seems normal, yet does not produce sufficient secretion for the bodily needs. Such cases may have but one or two symptoms in a mild degree—dry skin or falling out of hair—yet often improve when given thyroid extract in small doses, when other treatment fails.

Goitre.—This condition is the enlargement of the thyroid gland until it becomes practically a tumor. The new tissue which produces the swelling is not thyroid tissue. The disease is very common in Switzerland and some parts of Italy and Asia, less common in America.

Exophthalmic goitre or Graves' disease. In this disease there is oversecretion and enlargement of the thyroid but the enlargement is often slight, so slight as to be unnoticed. Women are the most frequent victims of this disease.

Symptoms.—Rapid heart, pulse usually between 100 and 160. Patient is bright, nervous, excitable, flushes and perspires easily. Mind is restless and apprehensive—a condition described as "crystallized fear." There is often a peculiar nervous disturbance in the movements of the eyes, which as the disease advances become prominent. Gastro-intestinal disorders are common and more or less emaciation results.

Treatment is usually directed to checking the internal secretion. Rest cure is usually needed and in some cases X-ray treatment has given good results. Removal of a part of the gland, and ligation of blood-vessels to decrease the blood-supply are operative measures commonly resorted to.

Parathyroids.—"Behind and in the thyroid gland are from three to four smaller glands, about the size of a bean. These also furnish only an internal secretion. When these are removed, a fatal tetan [illegible] tany is meant a peculiar convulsion of the arm [illegible] become rigid, with all points flexed." (Emer [illegible]

In Addison's disease [illegible] re is anemia, general debility, marked feeblen [illegible] tion, irritability of the stomach, and a peculia [illegible] color of the skin. This disease of the supraren [illegible] lrenals, is believed to be frequently of tubercul [illegible]

The pituitary gland is small—about the size of a bean—situated at the base of the brain. "It consists of two lobes, an anterior and a posterior. The anterior lobe has a marked relationship to the generative system for it is found that young animals in which it is destroyed show no further sexual development and the genital organs remain in an infantile condition; also similar results have been recorded as following disease of this gland in the human subject."

Extract of the pituitary gland has been found to have an important effect on the muscle tissue of the uterus, markedly increasing the strength of contractions during labor.

The genital glands exercise a dual function and their removal not only induces sterility, but also produces other effects in general development. There is believed to be a close relationship between the genital glands and the other ductless glands, all of them having an important influence on nutrition.

Obesity, an excess of fat, may be hereditary. Only when the fatness becomes burdensome and a hindrance to the vital organs does fat become a disease and require reduction. There is no drug known that will cure the condition. Any drug that accomplishes fat reduction does it by a weakening depletion of an overworked system, and results are not permanent, except that vitality lost in this way may never be restored.

A physiologic reduction of fat is possible in many cases—that is, a reduction brought about by a careful study of the natural laws governing digestion and elimination and a regime that is in harmony with those laws. This includes the avoidance of foods that tend to constipate, the freer use of foods which tend to promote elimination, a reduction of the total quantity of food and drink, and proper amount of exercise. Special diets for obesity are undoubtedly helpful in some cases, but the real secret lies in eating less food. One ounce of food too much at a meal may seem a trifle. If it occurs at every meal it means over a thousand ounces in a year. Even an ounce of food in a day, in excess of what the body needs, means a good many pounds in a year, and the excess has to be stored if it cannot be eliminated. In a person with a predisposition to obesity the excess of food is likely to be stored in the form of fat. A sufficient amount of exercise is an important feature in the physiologic reduction of fat.

Gout (podagra) is an acute inflammation of the joints, accompanied by swelling and a deposit of sodium urate around the joints. It is a nutritional disorder. There is imperfect elimination of waste material and defective oxidation of nutrient matter.

Predisposing Causes.—Heredity, alcoholism, overfeeding without systematic exercise. A gouty diathesis exists in many people. The joints most frequently affected are the first joint of the big toe, ankles, knees, and small joints of hand and wrist. The disease may be acute, chronic, or irregular. The acute attack usually begins in the big toe, and the onset is more apt to be in the early morning hours. The fever rapidly rises, and there is intense pain and swelling. The severe symptoms may subside for several hours and recur each night. An attack may last a week or longer. Some patients have three or four attacks in a year. Pericarditis may occur, gastro-intestinal disorders are common, also cutaneous eruptions.

Treatment is both preventive and curative. Persons of a gouty diathesis should guard against the attacks by careful hygienic living. Quality of diet is less important than that the patient should eat a proper amount for health and no more. Fresh vegetables and fruits, with the exception of strawberries and bananas, are not injurious. Excess of sugars and starches should be avoided. Moderation in all foods is the only safe plan. Water in all forms is valuable for prevention and cure. It flushes out the sewers and carries off the waste. It should be taken in large quantities on an empty stomach.

Rheumatism is a constitutional disease marked by inflammation and swelling, especially the muscles and joints, and attended with shifting severe pains in joints and muscles. It is accompanied with a disposition to acid perspiration. It is usually recurrent.

The term rheumatism is most confusing, and has been loosely applied to a great variety of affections. Many so-called cases of muscular rheumatism are neuralgia. "Uric acid has nothing whatever to do with so-called muscular rheumatism, popular prejudice to this effect to the contrary notwithstanding."[1]

General Hygiene.—Persons who are predisposed to rheumatic affections should avoid damp, dark dwellings, should guard against exposure to wet or sudden temperature changes, should avoid occupations which necessitate such exposure, should drink plenty of water, preferably some alkaline mineral water with laxative properties, and should choose a diet that is nourishing and avoid overloading the stomach. The clothing should be wisely chosen. Woolen or silk underclothing are recommended. Proper footwear and sufficiently warm clothing are important. Such patients are particularly liable to cold, and wool is better for absorbing perspiration than cotton.

Pellagra has been defined as "an epidemic disease of slow evolution, characterized by a complexity of nervous, gastric, and cutaneous symptoms which make their first appearance during the spring months, and recur year after year at the same season, remitting more or less during the winter months. The most distinctive features are: (*a*) A remitting erythema of the exposed parts of the body; (*b*) marked emaciation; (*c*) profound melancholia, alternating with mania."[2] The disease is not confined to tropical regions. For several years it has prevailed in Illinois, and in one hospital for the insane in that State over 150 cases were found at one time. It is stated that in the

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[1] Croftan, "Clinical Therapeutics."

[2] Sir Patrick Manson, M. D., in "Tropical Diseases."

United States 75,000 cases occurred in 1915. In some sections only tuberculosis and pneumonia exceed it as a cause of death.

Recent experiments undertaken in the Mississippi State Penitentiary go to show that a one-sided diet consisting mainly of carbohydrates is sufficient to cause the disease in a healthy human adult.

The experiments submitted to voluntarily by certain prisoners extended over many months, during which meats, milk, eggs, beans, peas, and similar proteid foods were withheld from the diet. In every other way they received the same treatment as their companions. The diet given them consisted of biscuits, fried mush; grits and brown gravy; syrup, corn bread, cabbage; sweet potatoes; rice collards and coffee with sugar. Symptoms of pellagra were noted five months after this test was begun in several subjects previously healthy.

There are a variety of types of the disease. In some the digestive symptoms predominate; in others, nervous, cutaneous, and ocular symptoms are marked; in others, symptoms resembling typhoid fever develop, with vomiting, diarrhea, and bloody stools.

Diabetes mellitus has been defined as "a disorder of nutrition in which sugar accumulates in the blood and is excreted in the urine, the daily amount of which is greatly increased. For a case to be considered one of diabetes mellitus it is necessary, according to Von Noorden, that the form of sugar eliminated in the urine be grape sugar; that it must be eliminated for weeks, months, and years, and that the excretion of sugar take place after the ingestion of moderate amounts of carbohydrates." (Osler.)

Causes.—The causes are somewhat obscure. It is said that heredity is a strong predisposing factor. It is more common in cities than rural districts, and occurs most frequently among the higher classes. Obesity, mental shock, and worry precede many cases. The disease has developed immediately after attacks of influenza, diphtheria, typhoid fever, and has followed injury or disease of the brain or spinal cord. The disease is said to be due to the introduction into the system of a larger quantity of carbohydrates and peptones than can be stored as glycogen in the liver, so that a portion is forced into the hepatic blood, and in some cases to changes in the circulation due to nervous influences.

Symptoms.—The disease usually develops very gradually. Among the early symptoms are inordinate thirst and frequent micturition. The urine may be increased from 6 to 8 pints in a day in mild cases to as high as 40 pints in very severe cases. The specific gravity ranges from 1025 to 1045, though it may be below normal, and may contain from 2 to 10 per cent. sugar. From 10 to 20 ounces of sugar or even more may be excreted in twenty-four hours. The tongue is dry and glazed and stomatitis is not uncommon. Generally, the digestion is good and the appetite for food and drink voracious. Rapid emaciation may occur, but in certain chronic forms the general condition of the patient may remain fairly good for years. The heart and blood-vessels are frequently affected. Fatty degeneration of the liver usually occurs. The disease is one of faulty metabolism.

Complications.—Lobar pneumonia is a common complication, tuberculosis and bronchopneumonia still more common. Albuminuria, and occasionally cystitis, occur. Boils, carbuncles, eczema, an intolerable itching of the skin, and gangrene in different parts of the body are frequent complications.

Prognosis.—Where the disease occurs in subjects under forty recoveries are rare, and in children it is rapidly fatal. Where there is no hereditary prediposition the outlook is more favorable, and it is stated, as a general rule, that the course is slow in proportion to the age of the patient at the time of development. Stout, elderly men are more hopeful subjects than thin, younger persons.

Treatment.—Strict attention should be paid to the personal hygiene, and the system kept in the best possible condition by proper clothing, baths, and systematic exercise or massage. The diet is the principal curative factor.

A great variety of diet-lists for diabetics have been published. A non-carbohydrate diet is the rule.

Diabetes insipidus is a chronic disease said to be of nervous origin. Like diabetes mellitus, it is characterized by the excretion of large quantities of urine, but the urine is almost normal, though usually of low specific gravity.

Causes.—Traumatism, violent emotion, and sunstroke have been noted as exciting causes. Malnutrition in children is a predisposing factor, and the excessive drinking of cold water or alcoholism have preceded the disease in some cases. It is said to be due to a disturbance of the renal vessels as the result of local irritation, or to functional irritation of certain nerve centers, resulting in renal congestion. Kidneys are enlarged and congested in many cases and the bladder hypertrophied. The disease differs from diabetes mellitus in many features. There is a low specific gravity instead of high, and an absence of sugar. The appetite is rarely excessive. Albumin in the urine is rare. The inordinate thirst is common to both forms. The prognosis depends on the cause of the trouble. Recoveries are not uncommon. The disease may assume a chronic form and persist indefinitely, and the patient die from some other disease.

Hysterical polyuria is not uncommon, and is treated as a nervous affection by rest cure, psychotherapy, hydrotherapy, etc. Most sufferers from diabetes insipidus are nervous persons. In a few cases syphilitic lesions have been found.

The reduction in the use of liquid foods and the promotion of elimination of water through other channels than the kidneys is often tried with good results. The "thirst treatment" is irksome and distressing to the patient. The thirst is partly counteracted by the chewing of gum or swallowing of small ice-pills. (For specimen dietaries see Appendix.)

Nursing the Aged.—In all nursing the study of the patient is important, but especially so in dealing with the aged and with children.

The mental attitude of the aged patient is important to be reckoned with in the general management of the disease. Frequently such patients are discontented for imaginary reasons, but for reasons which appear very real. They frequently feel that they have outlived their usefulness; often they have outlived their friends and many of them suffer keenly from loneliness, even when surrounded by younger people. Many of them feel that they have nothing to live for, that life has nothing ahead for them. Many of them feel that they are in the way—no longer needed or valued. This condition of loss of will-power or desire to live is often a serious complication. The nurse who deals successfully with this class of cases needs tact, patience, and sympathy untinged with pity. Such patients often resent pity, while they keenly desire a sympathetic understanding of their needs. Close observance of the likes and dislikes of such patients, and the happy art of radiating cheerfulness are among the essentials to success.

The psychic treatment is exceedingly important in many such cases. The nurse must be able to combat the idea that the patient is no longer needed—must be able to create a real desire to get well.

Many rules of nursing other patients need to be disregarded in nursing the aged, and the nurse must often move slowly and cautiously to accomplish duties that seem essential.

Practical Points.—Even if the air in the room seems to call for ventilation, do not throw open the windows at once on arrival. Often it is wise to wait till the patient is asleep before attempting to ventilate.

Always be careful to add extra covering and to screen such patients from draughts, even if the room seems warm. They are usually more sensitive to cold than younger people.

Do not attack them at once with a proposal to bathe them, even if they seem to need it. Usually they submit to having their hands and face bathed. At another time it may be wise to suggest bathing the feet, and as they become accustomed gradually to the nurse, they will probably accept the idea of a full bath without protest.

It is wise to give their baths at the hour they wish them given. Their convenience and comfort and not the nurse's plans are the first consideration. Do not deprive them of their flannels if they have been accustomed to sleeping in them.

Be as economical with bed-linen as possible, for most old people dread being too much care and expense, especially if they are dependent on others.

Do not at once on arrival try to deprive them of their feather bed. It may be wise to endure its disadvantages all through the illness, and get along as well as possible with this unsanitary article.

For the same reason it is not wise at once to clean up the room and the nurse who is wise will be slow in clearing out what she considers "unnecessary things." Most old people have their small possessions which they wish to keep in sight. Unless positively harmful these should be left in their accustomed places or not removed without consulting the patient.

Most aged patients are firm believers in drugs and take them without protest. It is often a help to consider concentrated foods, peptonoids, etc., as medicines, rather than as nourishment.

Try as far as possible to have foods flavored as they like them or to have the salt, pepper, etc., always ready to add more if they wish.

Humor the patient always when it makes no difference.

Study the topics of conversation in which they are interested and avoid getting into arguments with them.

Study to keep the patient happy. The nurse who does this has gone far toward helping him to recovery.

CHAPTER XI

DISEASES OF THE BLOOD AND CIRCULATORY SYSTEM

In previous lessons the composition and functions of the blood and the anatomy and physiology of the circulatory system have been studied.

The *composition of the blood* is altered in a great many diseases. The number of red corpuscles may increase or decrease. The white corpuscles also vary in amount and the quantity of hemoglobin may be altered. Bacteria are found in the blood in many diseases.

Leukocytosis, a temporary increase in the white blood-cells, occurs normally during digestion and in pregnancy. This condition occurs as a pathologic change in various fevers, during inflammation, and in traumatic anemia.

Anemia may be defined as a condition in which the blood is deficient as to quality or quantity. The condition may be local or general.

Anemia frequently occurs from hemorrhage and may be traumatic or spontaneous. It may also result from improper or unsanitary living conditions and from various diseases. As a rule, it is marked by a loss of energy, palpitation, and general symptoms.

Chlorosis (green sickness) is a peculiar form of anemia, mostly affecting girls about the age of puberty. Associated with the disease there are usually digestive and nervous disturbances, perverted appetite, and disorder of the menstrual function.

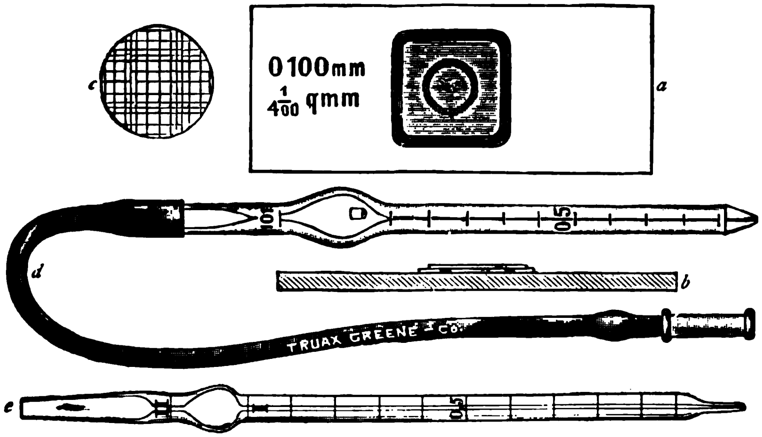

Fig. 38.—Thoma-Zeiss hemocytometer for counting the blood-corpuscles: *a*, Slide used in counting; *b*, sectional view; *c*, portion of ruled bottom of well; *d*, red pipet; *e*, white pipet.

Pernicious anemia is a severe disease, the cause of which is unknown. It is marked by a progressive decrease in the red corpuscles and usually with emaciation and fever. The destruction of the red corpuscles continues in spite of treatment, though temporary improvement often occurs. As a rule the disease is fatal.

Leukemia is marked by an increase in the number of leukocytes in the blood, associated with changes in the spleen, lymphatic glands, or bone marrow.

In practically all cases marked by anemia the treatment is largely hygienic, based on fresh air, proper diet, and freedom from worry and care. Iron, arsenic, and oxygen are all helpful in improving the anemic condition.

Purpura is a disease characterized by the formation of purple patches on the skin and mucous membranes due to subcutaneous extravasation of blood. Strictly speaking, it is a symptom rather than a disease. In severe cases hemorrhage from the mucous membranes occur. Some of these cases are rapidly fatal.

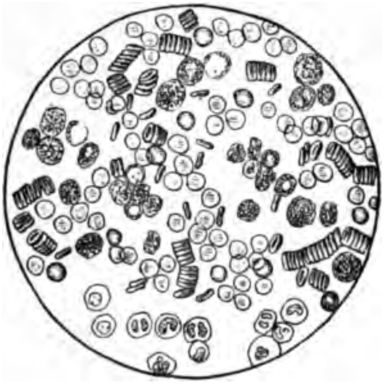

FIG. 39.—Appearance of the blood in leukemia (Funke).

Hemophilia is a strong and abnormal tendency to bleeding or hemorrhage from trifling causes. It is usually hereditary. The blood is deficient in clotting qualities. Such cases should be carefully guarded from injury.

DISEASES OF THE HEART

Valvular diseases of the heart are among the common affections of that organ. Under ordinary conditions the heart has sufficient reserve power to meet sudden exertion and can for a time do extra work.

The heart itself may be healthy but the blood-vessels may be narrowed or the action of the heart may be rendered more difficult from obesity or other causes and its powers become overtaxed. This induces in many cases hypertrophy and dilatation.

Hypertrophy occurs frequently because of some mechanical obstruction where more than normal work is required, and the heart muscle develops to try to meet the demands on it. The chambers dilate, and are able to deal with more blood at each beat. If the overtax on the heart is moderate, the hypertrophy and dilatation may be sufficient to deal with the extra strain and symptoms of [illegible] may not be manifested for years.

In the **dilated heart** [illegible] s relax. They have lost their tone. "When be[illegible] ease the heart is working beyond the limit of its [illegible] uscle fibers cannot maintain their tone; hence [illegible] and more—that is the heart-wall stretches, th[illegible] and it beats fast feebly and irregularly. Soon [illegible] ar incompetency begins. The patient cannot lie down, but sits up, panting for breath; he becomes cyanotic and dropsical; the least exertion is distressing, and his life is one of misery. Yet by proper treatment one may restore the heart to comparatively good health." (Emerson).

Compensation.—When one or more of the valves is narrowed or becomes diseased, weakened, or insufficient a compensatory process is set up which for a time counter-balances the defect of structure or function. In this way the effects of leakage or obstruction are neutralized and normal circulatory conditions carried on. In the treatment of valvular lesions the aim is to assist the body in maintaining this balance of compensation, or in restoring it after it has begun to fail.

In practically all valvular diseases in the later stages there are hypertrophy and dilatation of different portions of the heart, arterial degeneration, changes in the blood-pressure, and cardiac dropsy in different organs.

Regurgitation is a backward flowing of the blood. The valves fail to close and the blood rushes back into the cavity it just left.

Points to Observe in Cardiac Patients.—The position of the patient afflicted with cardiac disease is important. Almost every such patient assumes a characteristic position in which he is able to secure a greater degree of comfort than in any other. Many cannot lie down; others lie on the back or side;

others sit up and lean forward. If a change from the ordinary position is assumed by the patient and maintained, it is worthy of being reported to the doctor. Difficulty in breathing is always to be noted. It may be due to a variety of causes, but should never be overlooked.

Likewise, the color and expression of the face are important indications. This may vary from a fleeting pallor to cyanosis which persists, and very frequently, owing to liver involvement, the complexion may become jaundiced.

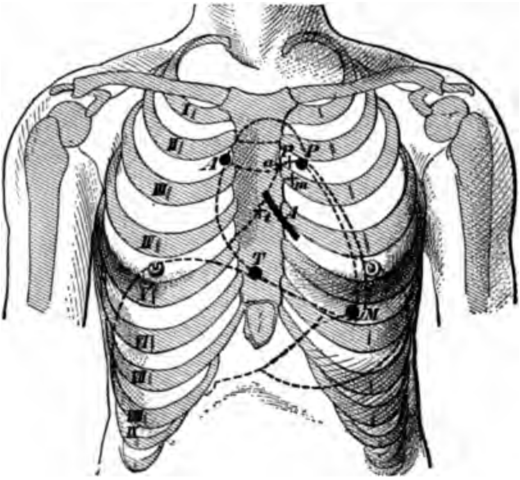

Fig. 40.—The anatomic situation and the points for auscultating the valves of the heart and its orifices. The crosses indicate the anatomic situation, but the black points and lines the places to auscultate. The small letters show the location of the valves, the large ones the points for auscultating: *aA* = the aorta; *mM* = mitral valve; *pP* = the pulmonary orifice; *tT* = tricuspid (Vierordt and Stuart).

Many cardiac patients have a persistent cough. In cases in which the heart is largely dilated there is apt to be expectoration also. The character of cough and expectoration and any variation from the ordinary are points to be observed and reported. Always note the presence of dropsy or edema. As a rule this is first noticed in the lower extremities, and appears last in the face.

Mental changes in cardiac patients are always to be looked for. The brain may be anemic or, owing to lack of oxygen, may be in a state of congestion. Either condition will cause mental changes, which are usually more pronounced at night. The patient's statement as to pain should be carefully noted.

In the nursing care two points are of special importance: the position of the p [illegible] equires close attention to the little details whi [illegible] nfort in each individual case, and calls forth [illegible] ness of the nursing in improvising means to [illegible] rt—and the question of diet. The observation [illegible] e, which should always be made in such cases, [illegible] h to do in deciding the question of diet.

Diet.—The diet shou [illegible] us, and should be such as will not inflate the stomach or bowels with gas, which would interfere with heart action. Large meals are usually prohibited as imposing unnecessary labor on the heart and mechanically interfering with its action. Small meals at frequent intervals are the rule.

Albuminous foods and fatty foods are allowed. Starchy foods are restricted. Cabbage, potatoes, peas, beans, and aërated beverages are prohibited, because of their tendency to create gas. Liquids are reduced, and often a salt-free diet is prescribed. (See Appendix for Salt-free Diet.)

In many heart cases in elderly people the complete loss of appetite and a persistent insomnia are the most distressing symptoms. The loss of appetite is sometimes sudden, and often never returns. The patient's strength and tissues slowly waste, with little pain. An intense weariness is the chief difficulty complained of. No diet seems suitable in such cases and the patient's tastes are the best guide.

Exercise.—The regulation of exercise and rest are of extreme importance. Massage in these cases is often used.

"The *Schott exercise treatment* is a combination of passive and active resistive exercises of the trunk and extremities. The cardinal rules laid down by Schott for carrying out his treatment are the following:

"1. The exercise should be performed slowly, steadily, and without exertion.

"2. The same movements should never be repeated twice in succession.

"3. Each movement should exercise a different group of muscles.

"4. The patient should rest after each exercise.

"5. The pulse and breathing should be constantly controlled by the physician.

"The exercises should be performed for about half an hour in the morning and for twenty minutes in the afternoon, including pauses. If symptoms of stasis or stenocardiac attacks appear the exercises must be stopped."[1]

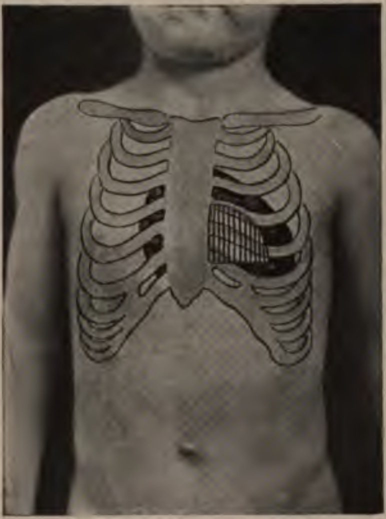

FIG. 41.—Large pericardial effusion. Area of dulness in solid black. Normal area of absolute cardiac dulness lined (Kerr).

Baths in these cases need to be carefully managed. Hot baths (over 100°F.) are, as a rule, prohibited, also cold baths. Lukewarm baths, having the water slightly below the temperature of the body, are useful.

Carbonated water baths (see Nauheim Baths, in Appendix) are beneficial when properly managed. They are usually given, at first, only every second day, and for not longer than five minutes. Later, daily carbonated baths are given and the length of the treatment extended. The temperature of the water must be kept up to the degree at which the bath was ordered or close to it. If the breathing becomes oppressive the patient must be removed from the bath.

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[1] Croftan, "Clinical Therapeutics."

Medicines are little used in these affections. Outdoor life is more conducive to recovery, and climate is important.

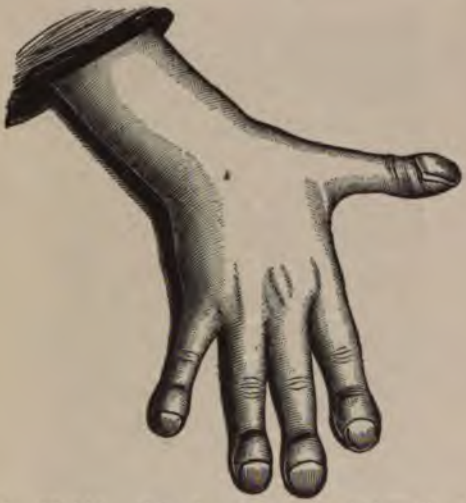

FIG. 42.—Clubbing of the fingers in congenital cardiac disease (Eichhorst).

Pericarditis is an inflammation of the serous lining of the pericardium, the membrane that surrounds the heart. It is commonly associated with, or a result of, rheumatism or other acute diseases. A pericardial effusion frequently follows.

The principal symptoms are pain in the region of the heart, difficult breathing, and embarrassment of the action of the heart when lying down.

Endocarditis is an inflammation of the inner lining of the heart. The inflammation is believed to be due to germs which are carried by the blood-stream and deposited there. The embolism which causes so many sudden deaths is frequently due to this primary cause. The inflammation may be simple or ulcerative, depending on the virulence of the germ.

Acute endocarditis sometimes follows so-called blood-poisoning; that is, a pin prick, dirty nail, etc., may provide for the entry of the infectious agent, but in most cases it is not possible to decide how the infection entered the body. It may follow any of the infectious fevers. It frequently follows rheumatic fever and many believe that inflamed or diseased tonsils are the point which afford entrance for the germs producing the disease.

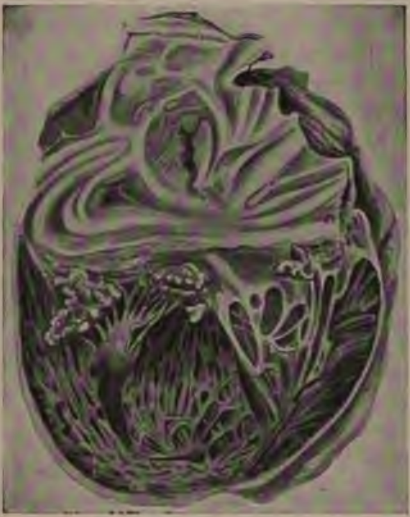

FIG. 43.—Endocarditis of the aortic and mitral valves, showing vegetations (fibrin-deposits) of considerable size (Kast and Rumpel).

Fatty degeneration is an increase of the deposit of fat, a corresponding diminution of muscle, and indicates an impairment in the nutrition of the organ.

Angina pectoris (**stenocardia**) is marked by paroxysmal pain in the heart, with suffocation and fainting, due to spasm of the arteries.

"It is not an independent affection, but a symptom associated with a number of morbid conditions of the heart and vessels, more particularly with sclerosis of the root of the aorta, and changes in the coronary arteries." (Osler.)

Spasms are frequently induced by cold. A chill on getting out of bed on cold mornings, cold baths, or chilling from any cause may induce a paroxysm. Violent exertion, anger, or any strong mental emotion, and flatulent distention of the stomach are all exciting causes. Many of such patients die suddenly.

A quiet life, free from muscular exertion and worry, are best for those who are subject to this affection. Nitrite of amyl will sometimes relieve the spasms, but not always. Nitroglycerin usually gives relief. Chloroform also gives prompt relief. Morphin is often given if the pain continues.

In this affection preventive measures include a regulation of the diet and beverages and general régime, but unfortunately the disease is rarely suspected till degeneration of the arteries has passed beyond remedy, and the most that can be done is to guard against the spasms.

Pseudo-angina pectoris occasionally occurs in neurotic individuals.

Cardiac dropsy is a symptom, a result of disease. It occurs in connection with various forms of heart trouble.

Nursing in cardiac dropsy consists, in large measure, in securing for the patients the greatest degree of comfort possible. Most of such patients are unable to lie down, and a comfortable chair or bed rest with arms and, if possible, with projecting sides that will support the head when it falls over during sleep, should be provided. Plenty of pillows are a necessity. There is a great difficulty in breathing, which is usually worse at night. Sleeplessness is common. The urinary secretion is diminished. Saline purgatives are used to drain off the excess of fluid, and tapping is often required. Canton-flannel bandages on the edematous legs may be used. Good air is important, but sudden changes of temperature or a chilling should be avoided.

The *diet* is important and usually somewhat hard to regulate. Liquids are, of course, restricted, and, as a rule, starchy foods forbidden. The nurse's skill in these cases is mostly determined by her ability to bring a fair measure of comfort to the patient in spite of difficult conditions. It includes the use of a good deal of nursing ingenuity in improvising and the adjustment of appliances to meet the conditions as found in individual cases.

Neurotic affections of the heart are frequent and sometimes very distressing. The heart participates constantly in the emotions of the individual. Vascular contraction and vascular dilatation are familiar expressions of fear, surprise or shame. In nervous patients the heart rhythm is easily disturbed. The slightest approach of a physician to some nervous patients causes the heart to beat more rapidly. In others a constant state of fear or apprehension exists which causes various heart symptoms.

1. *Palpitation*, a condition of unduly rapid heart action which is perceptible to the individual. It may occur also in organic disease of the heart, but is commonly associated with hysteria or neursathenia combined with dyspepsia.

2. *Rapid heart* (*tachycardia*), in which the normal pulse rate may be 100 per minute. Cases of this kind sometimes result from fright and continue long after the excitement subsides.

3. *Slow heart* (*brachycardia*), in which the normal pulse rate may be between 40 and 50. It is often a family peculiarity. Osler speaks of a physiologic brachycardia which frequently occurs in the puerperal state. The pulse may drop to 40 or even to 34.

Nervous dyspnea is common and is met with in individuals who are in fair health. Many imagine that this condition is indicative of heart trouble. Quite frequently the difficulty in breathing is entirely overcome by a rest or change of environment for a time.

The moral influence of the nurse in overcoming the fears of such patients and assuring them again and again that they have no organic affection, will often accomplish what no amount of medicine will. When they fully understand that many of the symptoms they complain of are nervous symptoms, not heart symptoms, much has been gained.

Arteriosclerosis, hardening of the arteries, indirectly is the cause of a large number of deaths every year. It occurs naturally in old people. As a general rule, the longer the degeneration of the arteries is postponed the more active old people continue. It may come prematurely in middle life causing the middle aged to appear old before their time.

Causes.—These may be[1] "chronic infections (chiefly syphilitic); chemical; alcohol and tobacco are usually believed to contribute to this condition; auto-intoxications from the absorption of intestinal toxins; excessive eating, especially of meats; emotional strain or worry; and insufficient exercise resulting in bad digestion and metabolic disturbances."

"*High blood pressure* is an early sign and often the first one detected in heart and circulatory diseases. Briefly, it is a persistent pressure reading above normal. The normal reading is about as follows: New-born infant, 35 to 55 mm.; one year, 80 to 85 mm.; twenty years, 120 mm.; for each additional year beyond twenty, add ½ mm. These estimates refer to the systolic pressure."

Arteriosclerosis because of its effects on important organs of the body is being studied more carefully than ever before. To it is traceable thousands of cases of brain affections, the mental breakdown being due to arteriosclerosis of the arteries of the brain. The blood-vessels failed to carry sufficient nourishment, and the nerve-and-brain cells were unable to perform their functions.

Varicose Veins.—"When veins, either superficial or deep, become enlarged, tortuous and present at various intervals localized swellings, the condition is known as varicose veins. They occur in various parts of the body but most often are seen in the lower extremities, along the spermatic cord and around the anus. When found in the legs they are called varicose veins, along the spermatic cord, a varicocele and if around the anus, hemorrhoids. They are more common in men than in women, and appear most often between the ages of twenty-five and forty."

"This condition is the result of an increase of pressure in the veins caused by an obstruction to the return flow of blood or to a very weak vein wall which dilates under normal vein pressure. In either case the result is the same in that the vein dilates and presents the localized swellings spoken of. With stagnation of blood the tissues in this region have their resistance lowered and become very susceptible to infection. This condition in the veins is similar to the condition in the arteries known as arteriosclerosis. Individuals such as clerks, washerwomen, and cooks, who have to stand for a great part of their time, suffer especially from varicose veins of the legs, due to the stasis of blood from their position."

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[1] J. P. Munroe, M. D.

Treatment may be palliative or operative. Palliative treatment consists in the use of cold applications, elevation of the leg or the wearing of a tight fitting stocking of elastic that will support the superficial veins and force the blood to the deeper ones. The cold gives tone to the vein wall and the elevation by position rests the veins and gives them a chance to recover. In the proper cases the above methods give fair results. If the condition is due to patient's occupation the first step, if possible, is to have him change his work so that the strain will not be on the veins.

An **aneurysm** is a sac formed by the dilatation of an artery and filled with blood.

Phlebitis is an inflammation of the veins, due to infection.

Embolism is a floating, foreign substance in the blood which is carried along with the current till its progress is obstructed. It then plugs the vessel, cutting off the circulation beyond. When it lodges in the brain it produces paralysis. It is one of the frequent causes of sudden deaths. "An embolus is a thrombus which has become dislodged."

"**Thrombosis** may be a small clot of blood clinging to the vessel's wall or it may completely plug the vessel." (Emerson.)

When *thrombosis* occurs, absolute quiet in the recumbent position should be insisted on. Rubbing of the part is prohibited, lest it dislodge the clot. A thrombosis may undergo absorption, disintegration, calcification, or suppuration. When the thrombosis is complete, circulation and nutrition are cut off from tissues beyond, and unless collateral circulation is established, gangrene follows.

General Hygienic Management.—The following directions have proved useful in dealing with patients with chronic heart disease:[1]

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[1] Leaflet issued by Cornell University Medical Clinic. Arranged by William Hills Sheldon, M.D.

Remember, with good care and by obeying instructions you may live many years with little discomfort.

INSTRUCTIONS

1. Hurry, worry, hard work, drinking too much liquor of any kind, or beer, will shorten your life.

2. Get work wher ave to lift or strain, such as tailoring, operating

3. Live on the gr floor, as climbing stairs is very harmful.

4. Never hurry. ng slowly. Don't run or walk fast. If you g eath, or feel dizzy or faint, stop and rest. Don' t a strong wind or when it is very cold.

5. Rest all you can, lie down as much as possible. Have at least eight hours' sleep every night.

6. Be sure to get plenty of fresh air. Keep your windows open at night.

7. Wear flannels the year round, warmer in winter.

8. Avoid getting your feet wet.

9. See that you have one free passage of the bowels every morning, and never strain at stool.

10. Indigestion is very bad for persons with heart disease, as it is a strain on the heart. So eat very slowly, and chew your food well. Rest after meals. Do not eat so much that you gain weight.

11. *Diet.—Meat.*—Boiled, broiled, or roasted meat once a day. *Dairy Products.*—Milk, cream, and butter in moderation. *Cereals.*—Rice, hominy, Indian meal, barley, cracked wheat, oatmeal, cream of wheat, etc. *Bread* (at least a day old).—Whole wheat, rye, graham, corn bread. *Eggs.*—Cooked in any way except *fried. Vegetables.*—Potatoes in small quantities, beets, carrots, squash, lettuce, spinach, tomatoes, peas.

Avoid canned, salted, or fried meats. It is better to eat small meals frequently than too much at one time.

Do not drink much water or fluid of any kind at one time; it overloads the stomach and strains the heart. Drink water several times between meals, not with meals, and do not take more than a tumblerful at one time.

NOTES

NOTES

SECTION II

OBSTETRICS, GYNECOLOGY, AND DISEASES OF CHILDREN[1]

CHAPTER XII

THE REPRODUCTIVE SYSTEM

The organs and structures in the female which require special study before the nurse can intelligently comprehend the instruction which she needs regarding obstetrics and gynecology are the pelvis and the organs and structures connected with it; the uterus; the ovaries; the Fallopian tubes; the breasts; the external genital organs, and accessory structures.

The *bony pelvis* is composed of four bones, two ossa innominata, the sacrum, and the coccyx, and is situated between the trunk and the thighs. The os innominatum in infancy is composed of three separate bones which become fused in the adult. It is commonly spoken of as the hip-bone.

The *ilium* is the bone which forms the wide, flaring upper part of the pelvis.

The *ischium* is the lower part and joins the pubis.

The *pubis* forms the front of the pelvis. The junction of the pubic bone is called the symphysis pubis.

The *acetabulum* is a deep, cup-like cavity at which meet the three bones forming the os innominatum. It forms the socket of the hip-joint.

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[1] Before beginning the study of these chapters on Obstetrics and Gynecology the nurse should have been taught the principles on which asepsis is based, the methods of sterilization, and simple operating-room procedures. Otherwise she is unfitted to be trusted with an obstetric patient in labor or after labor. It may be desirable to have the chapters on Surgical Principles precede these studies.

The *joints of the pelvis* include the symphysis pubis, the sacroiliac joint formed by the junction of the ilium and sacrum, and the sacrococcygeal at the junction of the sacrum and coccyx. The sacrococcygeal has limited motion till middle life is reached, allowing the tip of the coccyx to be moved backward, thus slightly increasing the diameter of the pelvis.

The *promontory of the sacrum* is an important point in pelvic measurements. It is found on the anterior surface of the sacrum just below the articulation with the spinal column.

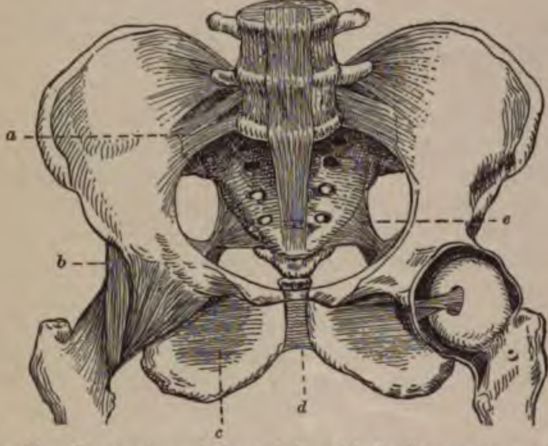

Fig. 44.—Front view of the pelvis, with its ligaments: *a*, Anterior sacroiliac ligament; *b*, iliofemoral ligament; *c*, obturator membrane; *d*, symphysis pubis; *e*, sacrosciatic ligament (Dorland).

Diameters of Pelvis.—The distance between two given points is termed the diameter of the pelvis. From the promontory of the sacrum to the posterior surface of the pubic bone is the anteroposterior diameter of the inlet and from the symphysis pubis to the coccyx of the outlet.

The *transverse diameter* is the distance across the pelvis at its widest points.

The *oblique diameters* are taken from given points on the right and left side obliquely across the pelvis.

The *false pelvis* is the term given to the upper part, which is broad and shallow.

The *true pelvis* is the lower part, also known as the cavity of the pelvis.

The *iliopectineal line* is a ridge or line extending from the top of the pubis to the promontory of the sacrum. It divides the false from the true pelvis. This line or brim marks the inlet. The lower end of the true pelvis is the outlet.

The *female pelvis* is broader, shallower, and more roomy than that of the male, and the pubic arch is shorter and wider.

Organs of Female Pelvis.—The organs contained in the female pelvis are the uterus, ovaries, Fallopian tubes, bladder, and rectum. Beside these there are muscles, nerves, and numerous blood-vessels.

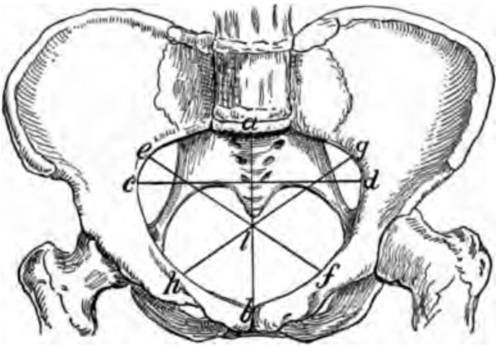

FIG. 45.—Female pelvis, one-third natural size, showing form and diameter of brim or inlet; *ab*, Anteroposterior or conjugate diameter; *cd*, transverse diameter; *ef*, right oblique diameter; *gh*, left oblique diameter (Dorland).

Internal Generative Organs.—The uterus, ovaries, Fallopian tubes, and vagina are the internal organs or parts of the reproductive system.

The *external genitals*, also termed the vulva, include the mons veneris, a pad of fat over the pubis; the labia majora and labia minora; clitoris; vestibule; meatus urinarius, hymen, and perineum.

The *uterus* is suspended in the center of the pelvis behind the bladder and in front of the rectum. Normally, it is freely movable. It is a pear-shaped, hollow organ about 2½ inches in length and in its unimpregnated state weighs from 2 to 2½ ounces. It is composed of three layers of muscles, and is lined with a mucous membrane known as the endometrium.

The *divisions of the uterus* are the fundus, or the large, rounded upper part, the body, or middle part; the cervix, or neck, which projects into the vagina.

The *cervix* has an opening, known as the os, through which the menstrual flow and uterine discharges escape and the child must pass.

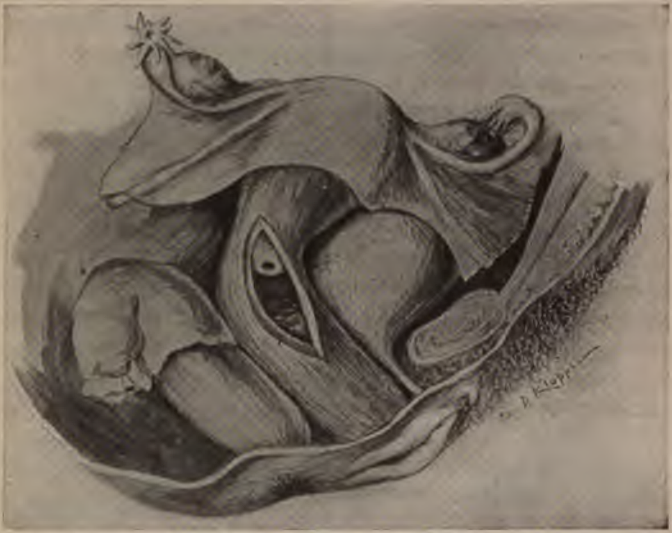

FIG. 46.—Bladder, uterus, ovaries and tubes, and rectum seen from the side. A lateral opening has been made in the vagina to show the cervix (De Lee).

The uterus has two other openings leading into the right and left Fallopian tubes. It is covered with peritoneum, except in the front of the cervix.

The *functions of the uterus* are to receive and nourish the fertilized ovum and ultimately to expel the fetus. It also furnishes the menstrual flow.

Ligaments of the Uterus.—The chief ligaments connected with the uterus are the two round ligaments and the two broad ligaments. The round ligament resembles a cord. It extends from the upper part of the uterus, and is attached to the tissues around the pubis. The broad ligament is a fold of peritoneum extending outward on either side of the uterus to the side of the pelvic cavity.

The *ovaries* are oblong, rounded, and rather firm bodies about 1½ inches in length situated one on each side of the uterus and connected with it by the ovarian ligament. Each ovary is in structure simply a bunch of ova or microscopic eggs, supported and held together by the connective tissue which constitutes the framework. The ovum (plural ova) is the sexual cell, the contribution of the female toward the formation of another human being. Each ovum in the ovary is contained within a minute sac, called the Graafian follicle. Each ovary contains many thousand eggs, a comparatively small number of which reach maturity.

Ovulation is the term given to the periodic discharge of the ovum. As the ovum approaches maturity the Graafian follicle which covers it enlarges and projects on the surface of the ovary. When fully mature the follicle breaks and liberates the ovum, which finds its way into the Fallopian tube, thence through the uterus into the vagina. This process is repeated about once in four weeks, and usually takes place during menstruation.

In exceptional cases ovulation may take place without menstruation, as, for instance, when a girl who has never menstruated becomes pregnant, or a woman becomes pregnant after child-birth without the menstrual flow having reëstablished itself. In most cases ovulation and menstruation occur about the same time.

Impregnation.—If the ovum becomes fertilized by union with the male sexual cell, the process, impregnation, generally takes place during the passage of the ovum through the tube. It then passes into the uterus and attaches itself to the uterine wall, and the period of pregnancy begins. When pregnancy occurs, as a rule, both ovulation and menstruation cease.

Functions of the Ovary.—"One function has already been mentioned—the reproductive function. It has another function known as the trophic function (trophic, pertaining to nutrition)."[1] By clinical observations, particularly in operative patients, and by experiments on animals, the following facts have been demonstrated:

"1. That the ovary controls menstruation.

"The ovary furnishes the menstrual impulse, though the menstrual flow (the blood) comes from the uterus.

"2. That the ovary controls to a certain extent the development of the uterus and breasts. When the ovaries of newly born guinea-pigs were removed the breasts, the uterus, and even the external genitals failed to develop. When one ovary was left the normal development took place the same as though both ovaries were present.

"3. That the ovaries control to a certain considerable extent the nutrition of the uterus even in adults. Numerous experiments in rabbits, dogs, and cows have shown that after the removal of both ovaries the uterus slowly atrophies. Clinic experience and pathologic investigation have shown that the same results gradually take place in women after the removal of both ovaries.

"4. That the ovary exercises a decided influence on the nervous system. In nearly every case after the complete removal of both the ovaries there appear certain nervous disturbances. If one ovary be left, or even part of an ovary that continues its functions, these symptoms do not appear, showing that it is the ovary that exercises the controlling influence."

The *Fallopian tubes* open on either side from the fundus of the uterus. These are from 3 to 5 inches in length. At the outer end the tube is curved somewhat around the ovary. This end opens directly into the peritoneal cavity. The fact that there is a direct opening into the peritoneal cavity through which infection may take place is attributed as a reason why pelvic diseases are more common among women than men. The cells of the mucous membrane lining the tube have cilia, or small hair-like projections, which aid (through their wave-like motion) the passage of the ovum through the tube to the uterus. The free end of the tube has a number of finger-like projections. This fringed end is called the fimbriated extremity. One of the fimbriæ is connected with the ovary. When the ovum, or egg, is ready to be discharged the fimbriated ends grasp it and convey it into the uterus.

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[1] Crossen.

The *function of the Fallopian tubes* is, in brief, to convey the ovum from the ovaries to the uterus. It also assists in the transmission of the spermatozoön, the male sexual-cell, in the opposite direction.

The *vagina* is a thin-walled canal which extends from the outside of the fundus of the uterus to the outer world. It is about 5 inches in length. Its anterior wall is in contact with the bladder, and the lower part of the posterior wall in contact with the rectum. The cervix of the uterus projects into the vagina. Behind the cervix is a pouch known as the cul-de-sac, or pouch of Douglas. The opening from the vagina is partly covered by folds of mucous membrane, known as the hymen.

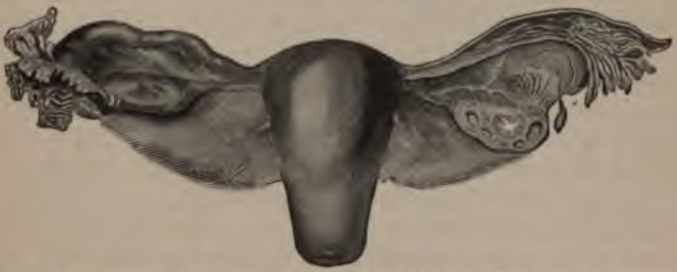

FIG. 47.—Uterus, tubes, and ovaries. On the right the ovary and tube have been laid open (De Lee).

The *peritoneum* of the pelvis is a membrane which surrounds the pelvic organs and lines the pelvic wall.

The *perineum* is the name given to the fleshy wall that lies between the vagina and the rectum and anus.

The *breasts*, or mammary glands, are situated on the anterior chest-wall between the second and ninth ribs. These glands are made up of lobes. The lobes are composed of milk-lobules and milk-ducts. From each lobule a tube leads into the main canal, which ends at the nipple. Between the lobes there are irregular spaces filled with fat and connective tissue. Normally, the nipple is elevated from ¼ to ½ inch above the surface, but occasionally the nipples are depressed or flattened. Around the nipple is a circular area, darker in color than the surrounding skin. This area is called the areola. It contains small nodules, which increase slightly in size during pregnancy.

CHAPTER XIII

THE PERIOD OF PREGNANCY

THE period of pregnancy includes the whole period in which the unborn child is growing. It begins with conception and ends with birth.

The *duration of pregnancy* is usually estimated at about 40 weeks, or 278 to 280 days. A common method of calculation of the time when the birth may be expected is to count back three months from the beginning of the last menstruation and add seven days. Others prefer to calculate that the birth is likely to occur at the time when the tenth monthly period would have probably occurred. No method of calculation is infallible, inasmuch as it is only in exceptional cases that it is possible to ascertain when conception actually did occur. Another method of calculation is by counting from the date when the first sensation of life in the fetus was felt. In the first pregnancy this period usually corresponds to the end of the twenty-second week, and by counting eighteen weeks ahead it is possible to arrive at a fairly close estimate. In women who have previously borne children the sensation of life, or quickening, is usually felt at about the end of the twentieth week, two weeks earlier. In such cases twenty weeks ahead are counted.

Conception is a term used to designate the fertilization of the ovum, and is usually supposed to occur within a few days after a menstruation period.

Labor, or accouchement, is the term applied to the period in which the expulsive forces are providing for the birth of the child and of the placenta.

The *placenta* is the source of nutrition and the organ of respiration for the child in the uterus. It resembles a flat cake and has two surfaces, the maternal and the fetal. From the fetal surface extends the umbilical cord, or funis, by which the fetus and mother are connected. The fetal surface of the placenta is smooth and covered with a thin membrane, which in the form of a sac envelops the fetus. The maternal surface of the placenta is rough—resembles raw beef in appearance. It has many lobes or sections, many depressions, and many deviations from the normal are seen.

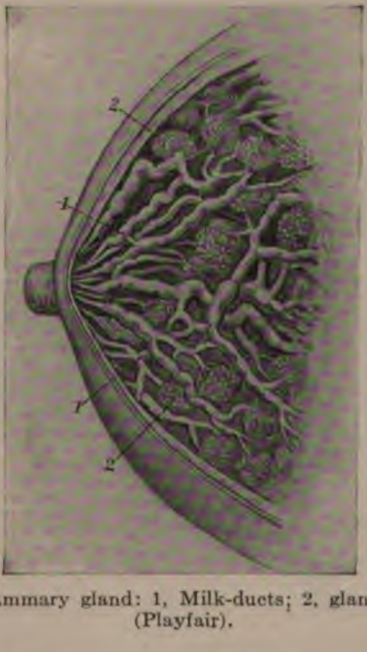

Fig. 48.—Mammary gland: 1, Milk-ducts; 2, glandular portion. (Playfair).

The *amnion* is the name given to the sac or membrane that encloses the fetus and forms a sheath for the umbilical cord. The cavity inside this sac is called the amniotic cavity. It is filled with a fluid, called the liquor amnii or amniotic fluid, with which the child is surrounded. The term "bag of waters" is commonly applied to this membrane and fluid.

The *chorion* is an embryonic membrane through which the embryo is nourished until the formation of the placenta, which is not present in the very early embryonic stages.

Decidua is a term applied to the membranous structure formed by the uterus during pregnancy and thrown off after parturition in the form of lochia.

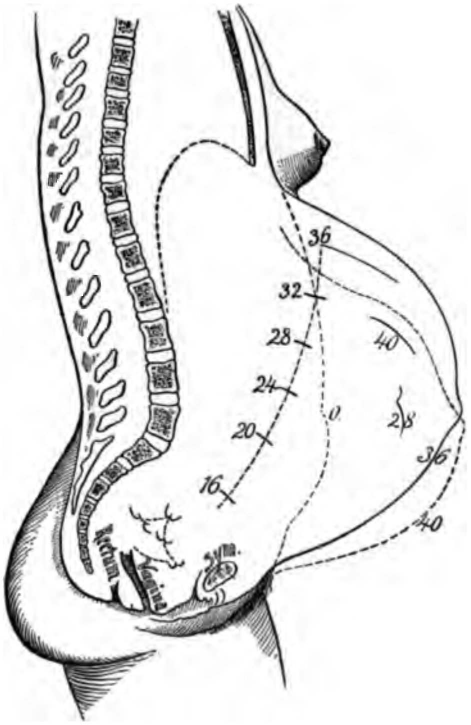

FIG. 49.—Abdominal enlargement of pregnancy, showing varying heights of the fundus marked in weeks (Schaefer).

Quickening is a term used to designate the first sensation of movement on the part of the child by the mother. This usually occurs about the end of four and a half months of pregnancy.

Lightening is a term used to designate the descent of the child's head into the pelvis, which relieves the pressure on the organs above. It usually occurs in the last month or last two weeks of pregnancy. In women who have previously borne children this change is often not well marked. The fetus is more readily accommodated in the pelvis, and there is more or less sinking of the uterus after the seventh month. When this occurs breathing is easier and walking usually more difficult. There is apt to be more frequent desire to urinate and more or less constipation.

Striæ is a term given to the small lines which form on the skin of the abdomen and thighs during pregnancy owing to stretching of the skin.

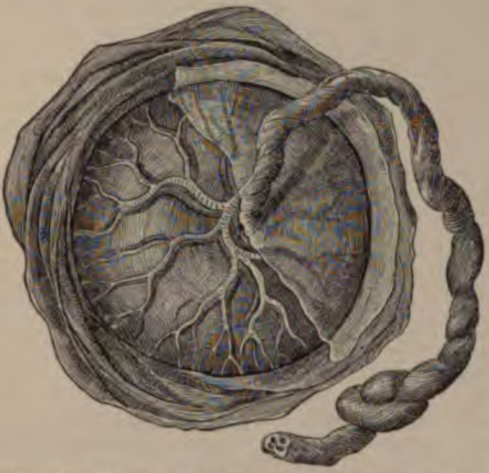

FIG. 50.—Human placenta, fetal surface. The amnion is dissected off one side to show the vessels (Tarnier).

Primipara is a term applied to women during the first period of pregnancy, labor, and parturition.

Multipara is used to designate a women who has had several children.

Changes in Early Pregnancy.—When the impregnated ovum attaches itself to the walls of the uterus nature at once proceeds to prepare for the development of the new life. The whole body of the mother soon feels the stimulus of the changes that have begun. The uterine walls begin to grow and continue to grow as the child develops. Many women have the idea that the uterus stretches, as does the external skin, but as pregnancy advances its walls become thicker and stronger than in the unimpregnated state, when it weighed about 2 ounces. At birth the uterus when emptied weighs about 2 pounds.

Important changes in t[illegible]ystem develop. More blood is at once sent t[illegible] nourish the new life. The blood-vessels increas[illegible]umber. Later in pregnancy the clotting qualit[illegible]re increased. Changes in the lymphatic syste[illegible]. The breasts enlarge and undergo other changes (Fig. 53). The nervous system is apt to be more unstable, more easily irritated. Neuralgic pains are common. The lungs, kidneys, and bowels are usually affected in some degree.

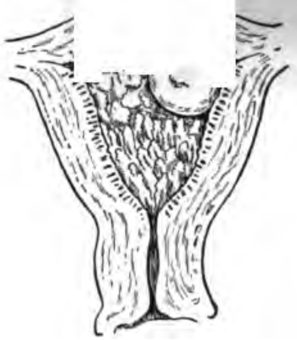

FIG. 51.—Showing attachment of ovum to uterine wall, also altered mucous membrane and enlarged blood-vessels (Wilson).

Symptoms of Pregnancy.—Signs of pregnancy may be divided into three main classes—doubtful, probable, and positive signs.

Doubtful signs, while doubtful, are numerous, and when considered in combination with other signs are also important. They are doubtful, because other conditions than pregnancy may produce the same signs.

The *cessation of the menses* is usually one of the first signs noticed, but in women who are habitually irregular it becomes an exceedingly doubtful sign and other conditions may cause it. Again, menstruation occasionally continues all through pregnancy, and pregnancy not infrequently occurs before menstruation has started. When the menses cease in a woman who is habitually regular, and other signs accompany it, it may be taken as a probable sign.

Other signs are *morning sickness*, a feeling of nausea with or without vomiting on arising in the morning; salivation, an increased secretion from the salivary glands; enlargement of the abdomen, which may be noticed about the third month; enlargement and tenderness of the breasts; darkening of the areola; quickening; uterine souffle, a whirring sound heard over the uterus; craving for unnatural foods. Changes in the color of the skin and in the vagina and vulva are common signs of pregnancy in the early months.

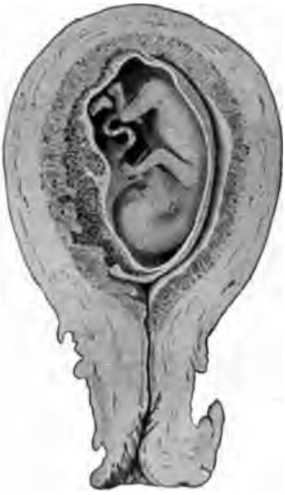

FIG. 52.—Two months' pregnancy, showing the fetus in the uterus (one-half natural size) (De Lee).

The *fetal heart beat* is regarded as one of the positive signs. It may be heard after pregnancy has advanced about four and a half or five months. The beats may number from 120 to 160,

have begun. The uterin [illegible]
grow as the child develo [illegible] be heard through the ab-
the uterus stretches, as [illegible] muffled ticking of a watch.
advances its walls be [illegible] should lie in the dorsal
impregnated state, wh [illegible] the abdomen. The best
the uterus when empti [illegible] the patient's left, with her

Important change [illegible]
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nancy the clotting [illegible] as the fetus grows and
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Fig. 51.—[illegible] Breast. Shows the primary
[illegible] secondary areola (De Lee).

and und [illegible]
apt to [illegible] examining finger inserted in the
pains ar [illegible]
affected [illegible] care which a pregnant woman

Sym [illegible] by others has an exceedingly
into th [illegible] child's welfare as well as her own.

D [illegible] should be exercised to observe the
cons [illegible] keep the functions normal as far as
Th [illegible]
ma [illegible] suffer from constipation to a
[illegible] occasionally diarrhea recurs again and
no [illegible] not only eat for two but excrete
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and excretory organs be kept in as good condition as possible. De Lee recommends for the relief of constipation the establishing of regular habits of attempting to empty the bowel, the use of laxative fruits, and a glass of cold water on rising in the morning and at bedtime; the abandonment of tea, and a diet containing fruits and vegetables in abundance, especially spinach, peas, beans, barley, tomatoes, corn, and foods of this kind. Davis advises a diet based mainly on milk, bread, and fruit. Most authorities advise that very little meat be used, and many prohibit beef entirely in the last three months, and earlier, if the kidneys seem to be performing their functions imperfectly. The chief reason for advising the curtailment in the amount of meat is because of the extra burdens always thrown on the kidneys in this period. Meat not more than once a day is a good rule for anybody, and especially desirable in the case of pregnant women. Wilson suggests the use of fish, oysters, lamb, fowl, salt meat, and eggs in moderation in normal cases. When morning sickness interferes with appetite and digestion in the early stages it is necessary that the patient take food at irregular hours. While that distressing period lasts

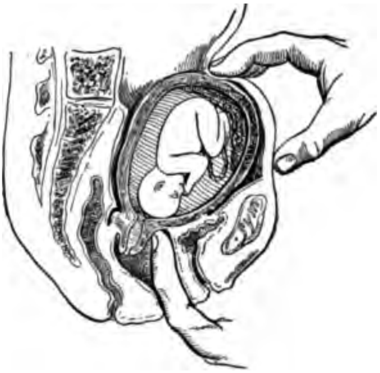

FIG. 54.—Vaginal ballottement (Dorland).

ise to cater to the appetite within reasonable limits. The
r craving for certain articles of food, if these are not
set or interfere with the digestive functions, may be

gratified, but rich foods, pastry, fried stuff, pickles, and sweets in excess are better avoided.

Clothing.—Most women need some caution along this line. As far as possible all clothing should be suspended from the shoulders, and pressure of any kind on the abdomen avoided. The lungs should be given plenty of room to expand. Because of the tendency of some women to varicose veins pressure from circular garters should also be avoided.

Exercise is exceedingly necessary to the welfare of the pregnant woman. It should never be violent, and should stop short of fatigue. It is just as well to avoid exercise which requires much upward stretching of the arms. Bicycle or horseback riding, or running a sewing machine for hours at a time, are not advisable.

Baths are needed for cleanliness, comfort, and health, but cold baths should not be taken. Hot baths also are best omitted, especially in the later months.

The *urine* needs to be constantly observed as to quantity and general character. Where constipation exists extra burdens are thrown on the kidneys. After the fifth month frequent and regular examination of the urine is desirable, and for this reason it is always well for the pregnant woman to decide early on the physician she desires to attend her, so that general conditions may be under observation and danger signals promptly recognized.

Vaginal discharges should be inquired for at intervals throughout the pregnancy. There is usually more or less leukorrhea. Bleeding from the vagina has special significance. This, and any signs of a purulent, or unusual or offensive discharge, should be promptly reported to the physician.

The *nipples* should receive some attention. If depressed, some measures may be used to draw them out, and compression should be avoided. Authorities vary as to the necessity or value of applying lotions to the nipple. The common method of bathing them in whisky or alcohol to harden them is condemned by De Lee, who says the nipple should rather be kept soft and pliable. If there is a physician in charge he will advise regarding this point. If the breasts are heavy they should be supported by a binder.

The *mental condition* is important. As far as can be the patient should be protected from petty irritations, shock, or worry. Especially is it desirable that well-meaning friends and neighbors are not allowed to fill her mind with tales of coming ills. Such patients are only too prone to become "blue" and despondent, and all reasonable means should be used to combat this condition.

Nurse's Duties During Pregnancy.—Every nurse who is engaged some months in advance of confinement should be able to advise the prospective patient regarding many details, but on one point she should be extremely careful—that is, to work always in harmony with the physician; to be careful that any advice or suggestions she may give are not in opposition to some advice the physician may have given. The neglect of this rule has been the cause of just complaint by many physicians, who have learned that the patient had disregarded their advice because the nurse had told them something different, or had told the patient to "be sure to call her if anything seemed to be going wrong." Such advice is doubtless well meant, but is better never given. If conditions seem to be in any way abnormal, the physician rather than the nurse should be consulted. The nurse should as soon as possible learn what responsibility for supervision the physician desires her to assume, and as far as possible see that the patient follows his directions.

Preparations for the Birth.—Most women know by instinct or observation the articles for the baby's use which will be needed. Decisions in this matter are always influenced by the financial conditions of the family, and extravagant preparations should never be advised. The list of articles below will be possible for even those in very moderate financial circumstances to secure, and can be added to as can be afforded:

Three flannel bands, 6 inches wide by 18 inches long. (Edges should be torn and not hemmed.)

Three shirts (long sleeves) of cotton and wool.

Three petticoats with sleeveless waists.

Three soft linen towels.

Three to six dresses of outing flannel or l

time of year. Night gowns if desired.

Two to three dozen light-weight cot

should be washed well, rinsed, and ir

Beside these it will save much washing if three or four dozen or more 12-inch squares of clean old linen be provided, which can be used inside the diaper and burned after use.

A couple of little quilted pads of cheese-cloth or soft cotton with a layer of cotton batting are often provided to slip between the diaper and skirts, and are a great help in keeping the clothing dry.

Two little comforts, [illegible] white outing flannel or cheese-cloth and cotton [illegible] ful to wrap the baby in. About a yard and a ha [illegible] od size. A piece of old clean blanket or flann [illegible] e child at birth will be needed.

Four ounces of olive [illegible] heet or new oilcloth to protect the mattress; o [illegible] asin of enamelled ware. To this list may be added the things usually contained in the baby's toilet basket—a cake of white castile soap, soft wash-cloths for body and mouth, talcum powder, plenty of safety pins, large and small; common pins, vaselin.

The following general supplies are desirable for the prospective mother to provide if possible:

One 4-ounce bottle of lysol or two dozen corrosive sublimate tablets.

One 4-ounce bottle of alcohol.

One-half pound boric acid powder.

One pound absorbent cotton.

One bed-pan.

One small granite basin holding about a quart.

Two quart bottles or jars for boric acid solutions.

Sufficient bedding and towels to allow for a change once in two days. A couple of quilted pads made about 27 inches long and 24 inches wide to place under the patient's hips while the discharge is profuse will help to protect the under sheet and save washing. These will later be useful for the baby's bed.

A much-appreciated convenience is a flannel bath apron. Inside the center half is tacked a strip of oilcloth or rubber about a half yard wide. Most young mothers will be glad to provide this, which will be useful during the baby's bath hour as long as needed. The nurse will find it saves much washing of aprons.

CHAPTER XIV

THE MANAGEMENT OF NORMAL LABOR

LABOR has been defined as that process by which the child is removed from the body of the mother. The forces which produce labor are the contractions of the uterus and abdominal muscles. Labor is not complete until not only the child, but the placenta and membrane are expelled.

A *normal labor* has been defined as one in which the head presents and descends regularly into the pelvis; in which the labor is concluded within twenty-four hours with safety to the mother and child, and in which the placenta is expelled by natural means in due time.

Stages of Labor.—The process of labor has been divided into three stages:

The first stage begins when regular contractions of the uterus begin, and ends when the os uteri is dilated sufficiently to allow the head to pass through.

The second stage extends from the complete dilation of the os till the child is expelled.

The third stage extends from the birth of the child till the placenta is expelled.

The term "*mechanism of labor*" is used to signify the manner in which the head enters the pelvis and the change of direction it undergoes in its passage outward.

Presentation is a term used to signify the part of the child which presents first at the inlet of the pelvis; thus, if the head presents it is called vertex or head presentation. Other presentations are face, shoulder or transverse, breech or foot. The outcome and duration of labor will be greatly modified by the presentation.

Position in labor is the relation which the presenting part bears to a given point of the pelvis. In vertex presentation the occipital bone, or occiput, may be toward the right or left of the pelvis. These are the most common positions. The left occipito-anterior position is considered the most desirable.

Signs of Labor.—A pain in labor means a contraction of the uterus. Very frequently in the last few weeks of pregnancy annoying pains occur, usually in the lower part of the abdomen, with some discomfort in the back. These have been called "false pains," to distinguish them from the true pains, which begin first in the back and gradually come around to the front. During the true pain the uterus contracts and the os dilates. The regular recurrence of these pains marks the onset of labor. If the pains are true pains there will soon, as a rule, be a slight bloody discharge called the "show." There are many "false alarms," however; sometimes false pains will occur at regular intervals for several hours and then subside.

The rupture of the "bag of waters" is sometimes the first sign, but in a normal labor the membranes are not ruptured till nearer the close of the first stage, during which they have assisted as a wedge in dilating the os. An early rupture of the membranes should be at once reported to the physician.

Preparations for Labor.—The preparation of the patient includes a cleansing bath, an enema to flush the lower bowel, the thorough washing of the vulva, buttocks, lower abdomen, and thighs with green soap and water, and afterward with an antiseptic solution. A sterile or antiseptic vulva pad should then be put on the patient and a clean gown.

It is important for the nurse to remember that from the beginning of a case of labor till at least ten days after delivery there are possibilities of infection to the patient. Practically no birth is accomplished without fissures or tears of some kind occurring in the birth canal. These may be very small, but the possibility of infection is there. Besides, there is the large, raw surface inside the uterus from which the placenta has separated or is gradually being separated; therefore the reason for surgical cleanliness is clear.

Infection may take place from the clothing of the patient or bed; from the hands of the patient, nurse, or physician; from dressings; from water, basins, or other appliances used about the delivery room.

The *bed* should have the mattress protected with a rubber sheet or oil-cloth. The regulation delivery bed has an extra delivery rubber and sheet placed over those ordinarily used in the care of such cases, which is removed when the birth is concluded. Whenever possible a Kelly pad should be provided.

The *room* should be cleared of unnecessary articles which collect dust easily and require to be dusted frequently or moved about. It should be clean, well ventilated and lighted, and moderately warm. Newspapers or some protection for the carpet should be made before delivery in a private home.

Plenty of hot sterile water is always needed. Both hot and cold water should be provided if there is time. Physicians differ as to the solutions used, but usually it is safe to prepare a half gallon of corrosive sublimate, or at least to have the water ready in which to dissolve the tablets. The boracic acid solution also may be prepared in advance of the physician's coming. For use in private homes many physicians prefer the lysol solution, and patients may wisely be advised to procure a 4-ounce bottle of lysol as a part of the preparation. The physician's preference of solution is always to be observed when possible.

Obstetrical Technic.—A prominent obstetrician provides each nurse who cares for an obstetric patient of his in private practice with a printed slip containing the following directions, which may serve as a guide in absence of other directions:

"1. When labor begins give patient a large enema of soap water. Then give a general bath and put on fresh clothing. Then scrub the genitals, perineum, lower abdomen, thighs, and buttocks with soft soap and warm water—using a soft brush. Wash off soap with boiled water.

"2. Then the nurse should disinfect her hands as follows: (*a*) Trim finger nails short and clean under them. (*b*) Scrub hands and forearms vigorously with brush, soft soap, and warm water—giving special attention to the irregularities about the nails. Rinse off the soap with boiled water. (*c*) Then scrub them in bichlorid solution (1 :2000) with a separate brush kept for that purpose.

"3. Then wash patient (genitals, lower abdomen, etc.), with bichlorid solution (1 :2000), using absorbent cotton, and after the washing cover the genitals with a thin pad of absorbent cotton wrung out of bichlorid solution (1 :2000) and wipe the other parts dry from bichlorid solution with a towel. The bichlorid pad may be held in place by a piece of gauze fastened to a gauze strip around the abdomen. The patient may then sit up or walk about until the pains become severe enough to confine her to bed.

"4. When any manipulation is to be made about the genitals (catheterization, change of pad, douche) the hands are to be sterilized as above directed, and after the manipulation the pad is to be replaced by the sterilized hand. No unsterilized object—hand, instrument, or dressing—is to be allowed to touch the genitals.

"5. Immediately after the child is born, the nurse is to place one hand over the uterus and keep it there until the binder is applied. When the uterus relaxes it is to be gently stimulated to contraction by gentle kneading, through the abdomen. After the placenta has been expelled, the genitals are to be washed off with bichlorid solution (1 : 2000) and the dressing applied and the binder put on.

"6. When the patient wishes to urinate, or the dressing has to be changed from other causes, proceed as follows: (*a*) Slip bed-pan under patient, remove dressing, and allow patient to urinate. (*b*) Cleanse hands as previously directed. (*a*) Wash genitals by allowing a warm bichlorid solution (1 : 4000) to flow gently over them, and then apply a fresh dressing and reapply the abdominal binder. The dressing should be spread out over the hairy region so that no dust nor anything else can get to the genitals. These dressings should be changed as often as they become soiled.

"7. No douche is to be given except by special order. The patient need not be catheterized unless she experiences difficulty in urinating or has a severe laceration. Catheters, douche-nozzles, and everything else coming in contact with the genitals must pass through the process of sterilization and *nothing* unsterilized is to be allowed at any time to touch the genitals.

"8. As soon as the child is born, before the cord is tied, and, if possible, before the eyes are opened, wipe all secretions from the lids with gauze or cotton and wash the eyes with boric acid solution (3 per cent.) or boiled water. After the baby is bathed, wash the stump of the cord with bichlorid solution, and apply a dressing of bichlorid gauze. After that keep the cord dry. Use boracic acid powder only when there is considerable secretion about the cord. Look at the cord frequently in the first few hours after birth, to see that there is no bleeding. Do not remove the gauze as long as it remains dry.

"9. As soon as the mother is rested after labor, that is, within six to twelve hours, the baby should be allowed to nurse. After that, until a free flow of milk is established, it should nurse only about every four hours. As soon as the milk flows freely the baby should nurse every two hours, from 5 A.M. to 11 P.M., and not between times, except for some special reason. If before the flow of milk is well established the child becomes restless and apparently hungry, in spite of nursing its mother, it may be given a small amount of boiled water frequently, and if that does not suffice, then milk prepared with peptogenic milk powder.

"10. In allowing the baby to nurse, open the breast binder and wash off the boric acid powder with a little boiled water. When the baby has finished nursing, cleanse the nipples with the boiled water, wipe dry and dust over them boric acid powder and place around them a small piece of cotton and reapply the breast binder. If nipples are tender, wash them with diluted alcohol after each nursing. Keep the baby in crib except when nursing."

The Normal Birth.—For some time before the birth nature has been preparing the way for the event. The child has gradually slipped downward. The glands located in the birth canal have become more active and increased secretions have been poured out which assist in lubricating the passage through which the child must pass. The pelvis has also undergone some preparatory changes. During the first stage the pains are most severe, increasing in severity as the complete dilation of the os is accomplished and the head passes through.

In the *second stage* the character of the pain changes. There is an instinctive tendency to bear down, and much assistance can be given by arranging for a firm support for the feet to press against in this stage, and a hand grapple of some sort. As the second stage advances the presenting part begins to press against the vulva. The pains which have lessened in severity again increase in preparation for the final expulsion. There is an irresistible tendency to bear down which needs to be restrained at this period. During the second stage the hand-solution basins should be placed where the doctor can conveniently reach them, and all possible aseptic and antiseptic precaution should be observed. Sterile towels or napkins should be in readiness to be used if needed. The vulva should be frequently cleansed with sterile cotton sponges and some antiseptic solution. In cleansing, care should be used to wipe the vulva downward, never in the opposite direction, which might carry infection into the birth canal. The patient should be brought close to the edge of the bed. Many physicians recommend that she be placed on the left side with the knees drawn up. Others prefer delivery in the dorsal position. The latter position is more frequently used in America.

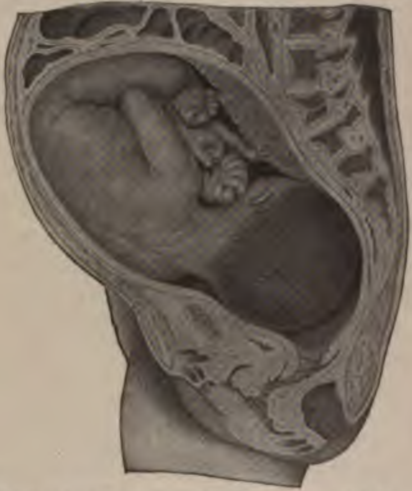

FIG. 55.—Child in the uterus at the beginning of labor, showing the formation of the bag of waters (De Lee).

As the head emerges gentle support of the perineum is given (Fig. 56), the hand being covered with a sterile towel or protected by a sterile rubber glove. Pressure is made upward and backward. If there is danger of too rapid expulsion of the head the nurse is sometimes instructed to pass her left arm over the abdomen between the thighs, and with gentle pressure on the child's head hold it back till the perineum is fully dilated. At this stage the instinct to bear down must be restrained, and the mother instructed to open her mouth and breathe slowly. In most cases, by proper management, a serious laceration of the perineum can be avoided, though fissures and slight lacerations are exceedingly common, and occur with all classes of obstetric practitioners. When the head is born it is customary to feel for the cord, and if it is around the neck it should be slipped over the head. The head is supported, and as the shoulder emerges it is directed upward to avoid strain on the perineum. The baby's eyes are cleansed with a boric acid solution, and with a finger protected by a bit of gauze the mouth is quickly wiped out. The hips and feet soon follow, and there is usually a final gush of amniotic fluid with more or less blood. This should be soaked up with a sterile towel or sheet and the baby protected from it as far as possible.

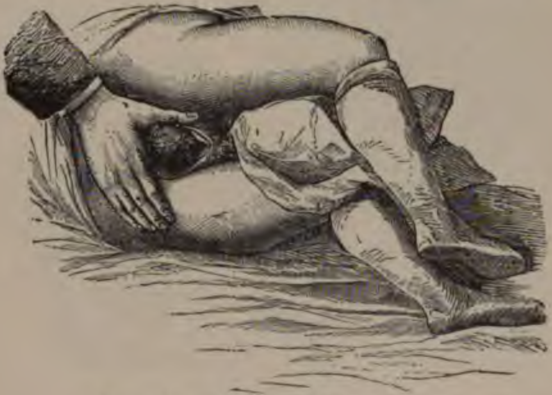

Fig. 56.—Support of the perineum.

Compression is made above the uterus, through the abdominal wall, to stimulate contraction and prevent hemorrhage. The child should be laid so as to avoid any tension on the cord.

Before the cord is ligated the part to be tied should be wiped off with an antiseptic solution, and the jelly which it contains pressed away as far as possible. The first ligature is placed about 1½ to 2 inches from the child's abdomen, the second 1 or 2 inches below it, and it is cut between the ligatures. Different methods of tying the cord are practised. The nurse should familiarize herself with the theory and practice of at least one method of ligation of the cord, as she will probably have to act in an emergency without a doctor many times if she does much obstetric nursing (Fig. 58).

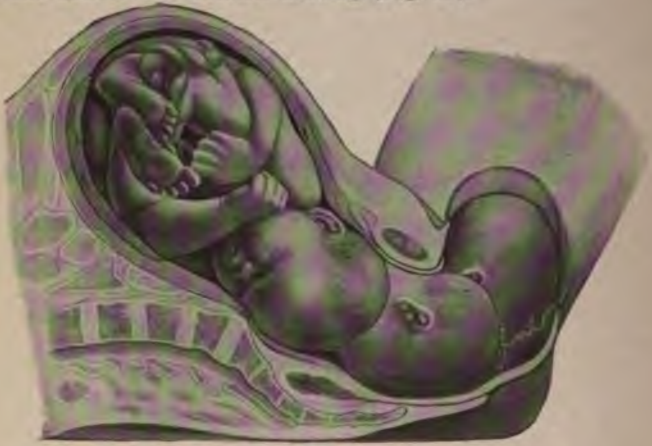

FIG. 57.—Birth of the head (Dickinson).

If the child does not breath or cry at birth usually sprinkling with cold water or a slight slap will produce the needed stimulus. If these simple measures fail to start respiration, the cord should be quickly severed and a tub of warm water provided for its immersion. Dipping the child for a few moments into cold, and then into warm water, is also practised by some physicians.

The *third stage* lasts usually from ten or fifteen minutes to three-quarters of an hour. The patient is on her back, and if a Kelly pad is not available she may rest on a douche-pan or bed-pan. The uterus is held to prevent relaxation during this stage. A basin should be in readiness to receive the placenta.

When the placenta appears it may be grasped with both hands and gently turned over and over to prevent tearing of the membranes. Forcible effort to assist in its expulsion by pulling on the cord should never be practised. Backward and downward pressure through the abdomen on the uterus during a contraction will in most cases be all the assistance required. If there is unusual delay in the expulsion of the placenta some physician should if possible be secured, if the one in charge of the case is delayed and the time of his arrival uncertain. The placenta should always be laid aside for the doctor's inspection.

The mother is then bathed around the buttocks and vulva, a sterile pad applied, and the bed changed and made comfortable.

The Use of Ergot.—The physician in charge of the case will order ergot if it is needed. If the nurse finds herself obliged to act in an emergency without a physician she may find it necessary to give it to check hemorrhage, though in average practice such occasions would be exceedingly rare. In isolated, out-of-the-way places where doctors are few and far between such emergencies would be more likely than in cities. The general rule regarding the use of ergot is that it should never be given until the labor is completed; after the placenta has been expelled. Some physicians, however, give it as routine practice as soon as the child is born, so that it will take effect as soon as possible after the placenta is expelled, but this routine use of ergot is not general. If the fluid extract of ergot is used a teaspoonful diluted with an equal amount of water is the usual dose.

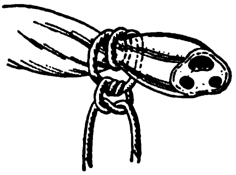

FIG. 58.—Diagram showing ligation of the cord (Wilson).

Pituitrin.—The use of this drug by physicians has become a common obstetrical procedure. "When administered to a woman in labor, the extract quickly causes an increase in the strength of the uterine contractions, while the duration of contraction becomes prolonged and the intervals between pains shortened. When administered during the first and second stages of labor, results are practically constant, and are most apparent if the pains have been previously feeble or far apart."

"It is usually administ cularly and the ordinary
dose is about 15 minims narily within ten minutes
after a single dose a ma he uterine contractions is
seen, and the maximum ined in from one-half to
one and a half hours. e effects gradually wear
off, but a second dose s powerful contractions.
It is an especially use he following obstetrical
conditions:

1. "To accelerate labor when already in progress. Its use has markedly decreased the necessity for the application of low forceps."

2. "To check postpartum hemorrhage. It may be used in conjunction with ergot."

3. "In the treatment of placenta previa it reduces the amount of hemorrhage."

4. "It has been noted to act on the bowels and bladder in postoperative distention or retention of urine, so that enemata can be dispensed with and catherization avoided."

"Occasionally, especially in elderly primiparæ, the drug appears to have no effect at all."

Other Effects "General symptoms such as cardiac distress, vertigo, tachycardia, and respiratory difficulty, are sometimes noted. Occasionally it results in a very powerful very prolonged contraction of the uterus with a resultant marked slowing of the fetal heart, but seldom is the child in real danger."[1]

The *nurse's duties* differ under different conditions and at different stages. If she arrives before the physician has been called she can report to him her observation as to character and frequency of the pains, and whether other signs of labor are present. She will, of course, be expected to prepare the patient and room, to assist the physician in every way possible, and render such assistance to the patient as she can. What can the nurse do to render labor more tolerable for the patient is a question often asked. Sometimes rubbing or pressure on the lower part of the back during a pain seems to afford relief. Occasionally a cramped limb can be rubbed and relieved. In the first stage a change of position can be suggested. Many patients are loath to change position lest their pains increase. Exhaustion of strength by useless thrashing around in bed can be prevented. Light nourishment, preferably fluid, in the early stages of labor is permissible. If difficulty is experienced in voiding urine the catheter should be used. A distended bladder may retard progress. Always use a rubber catheter on such occasions. It is a mistake for the nurse to allow the patient to drag on her arms in the bearing-down efforts, especially if the labor is protracted. Other mechanical means can be provided. In the last few expulsive pains firmly gripping of the patient's hands will help the patient and not unduly exhaust the nurse. She may be required to give the anesthetic, if one is used, to take off the keenness of the severity of pains. Complete anesthesia is, as a rule, not desired, except at the very end of the second stage. As a rule, very little of the anesthetic is needed for such patients. In all cases the nurse can give sympathy, encouragement, and moral support.

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[1] Grant Campbell, M. D.

CHAPTER XV

THE PUERPERIUM

THE *puerperal period* begins when the third stage of labor is completed. Its duration varies. As a rule, six weeks elapse before the patient may be considered to have entirely recovered. Often this period extends to three months.

Involution is the return of the uterus to its normal size after parturition. If abnormal conditions develop the process of involution may be incomplete and the uterus remain permanently enlarged. This condition is termed subinvolution. During the period of involution the lining membrane of the uterus and other tissues no longer needed are cast off and a new lining is formed.

The *lochia* is the term given to the discharge from the vagina in the first few weeks following child-birth. This discharge is first bloody. Besides the discharge from the uterus there may be blood from slight lacerations in the vagina. The bloody discharge in three or four days gives place to a serous pinkish discharge. After the eighth or ninth day the lochia becomes pale, almost white, and is more like mucus in character. The lochia has a characteristic odor of its own from the beginning, but the normal odor is never offensive.

Any sign of an offensive odor or special change in the discharge should be reported to the physician. It may be caused by retained blood-clots which are decomposing in the uterus, or by retained membranes or placenta. All these conditions require attention. The presence of large blood-clots in the discharge should be reported.

The First Day.—After the mother has been made comfortable following the birth the most immediate necessity for her is rest. A hot drink of some kind may be given her. Then the room should be darkened and she be allowed to rest or sleep for a few hours. Careful watch must be made all through the first day for signs of hemorrhage. The temperature and pulse should be noted before she goes to sleep and about every four hours unless she is sleeping.

Before changing the vulva pads the hands should be disinfected. If there are stitches in a lacerated perineum these require special attention. The same surgical precautions are needed as in dressing a wound. The puerperal woman is a surgical case with wounds, visible or invisible, ready to receive infection. The vulva pads for the first day should be changed every three, or at most four, hours. (For the next four or five days a change of pads about every four hours should be made. Then the discharge has lessened, so that once in six hours should be sufficient.) After the first day or two it is better to have the patient lie on one side or the other most of the time. She should not lie very much on the back.

The *diet* for the first day should be mostly liquid, though in a normal case toast or some other light nourishment may be added if the patient seems hungry. This will depend somewhat on how long or exhausting the labor has been, and the general condition and appetite of the patient. There is no special reason for starving a patient at this time.

The *colostrum* is the name given to the milk contained in the mother's breasts at and immediately following delivery. It is a thin fluid, saline and laxative in character, and not very nutritious. The baby needs just this laxative, and when the mother has rested the baby should be put to the breast and encouraged to nurse. This not only helps to stimulate the baby's bowels, but also promotes contraction of the uterus, stimulates the secretion of milk, and helps to draw out the nipple.

Cleanliness and Neatness.—A nurse may be very careful in observing the rules for surgical cleanliness and yet be a very untidy obstetric nurse. Wilson says, "the efficiency and thoroughness of a nurse are often judged by the cleanliness in which she keeps her patient. A soiled bed and unclean vulva pads may be the measure of the nurse's indifference to the proper care of her patient." This criticism is less frequently justified in the case of hospital-trained nurses than the criticism as to untidiness. There are so many little things which can be left lying around the lying-in chamber, and some nurses seem to be blissfully oblivious to an untidy room. They have evidently never formed the habit of having a place for everything and keeping it in its place when it is not in actual use. Order is quite possible in the average sick room, and the nurse who fails to secure it fails of her highest success as a nurse.

The Catheter.—To catheterize or not is a question that often presents itself in the first day or two following delivery. There has been much bruising and stretching of the parts. The urethra has been drawn from its normal position, and more or less swelling of the vulva is usually present. Unless the patient is suffering and unable to urinate, twelve hours or even longer may be allowed to pass before trying to have the bladder emptied. Most physicians prefer that the catheter be not used unless it becomes an absolute necessity. Before resorting to its use several other methods to induce urination should be tried. Some patients from sheer nervousness cannot relax to empty the bladder if any one is present.

1. Irrigation of the vulva with a warm antiseptic solution will often relax the parts so that the urine will flow.

2. A hot-water bottle or hot fomentation over the bladder.
3. Gentle pressure over the bladder with the hand.
4. The sound of running water from the faucet.
5. Allow the patient to sit up or be raised half upright.
6. An enema to clear out the bowels will usually cause urination, too.

If all these measures fail then the catheter must be used. The physician's wishes in the matter should be ascertained, if possible, before using it.

The Obstetric Binder.—The usefulness or uselessness of the abdominal binder during the puerperium is a question on which many conflicting opinions exist. A great many physicians advise using one during the first forty-eight hours. Others recommend its use only for the first few days after the patient gets out of bed, while the latter procedure is regarded as useless by many eminent physicians. In general when its use is recommended it is for one of three purposes:

To aid in preventing relaxation of the uterus.

To support the abdominal muscles.

To promote the comfort of the patient.

This latter point is the one considered by probably the majority of the physicians. When used to prevent hemorrhage a folded towel is placed underneath it, directly over the fundus of the uterus. Too great pressure is not desirable, and has been assigned as a cause for backward displacement of the uterus. Neither is a loose-fitting binder to be recommended. If used at all it should be snugly adjusted, and will need frequent tightening as the uterus contracts. Unless a nurse will properly adjust a binder and keep it adjusted it is of very little use, and might as well be discarded. It should not reach too high, should not be allowed to "ride up" over the trochanters, and needs to be changed, as a rule, every day. In pinning a binder it is customary to begin pinning at the umbilicus, pinning downward first, and then upward. Side gores should be made with the pins so that it fits snugly. It is better when possible to have the binders made with a curve in the back, to prevent soiling.

The Care of the Breasts.—Lactation is the term applied to the period in which the mother nurses the child. It terminates with the weaning. Before and after each nursing the nipple is washed with a saturated solution of boric acid. This solution should be kept in a convenient-sized bottle and never allowed to stand in an open glass, as is so frequently seen. Solutions handled in this careless way are apt to apply as many germs to the nipple as they remove. If there is tenderness of the nipple some simple antiseptic ointment or sterile albolene or olive oil are often ordered. Sometimes a breast binder is necessary if the breasts are large and heavy. Davis says, "the test of the value of a breast binder is the comfort which it gives the patient. It should hold the breasts gently but firmly, raising them and drawing them inward toward the middle line." If cracks or abrasions appear, or the patient complains of soreness of the nipples, it is a wise precaution to keep them covered with sterile gauze. De Lee recommends the use of cotton pledgets on tooth-picks when washing the nipples as a preventive of infection, thus

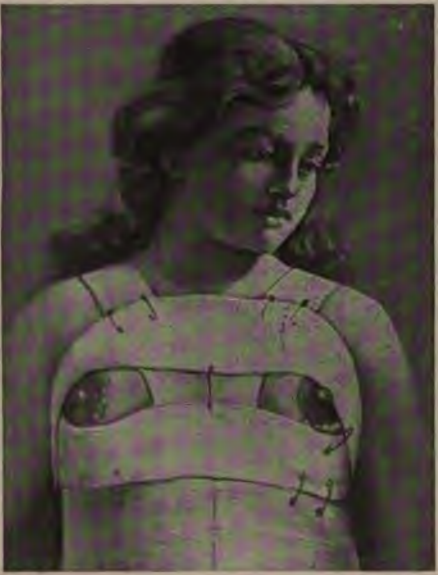

FIG. 59.—The Y-bandage applied (Boston Lying-in Hospital).

avoiding possible infection from the fingers. A breast-pump should not be used unless the physician orders it, nor should the breasts be massaged or rubbed without an order, as a general rule. If a nipple shield is used it should be sterilized by boiling twice a day, washed after using, and kept in clean boric acid solution covered.

After-pains are, as a rule, due to muscular contraction as the uterus returns to its normal size, but may be caused by blood-clots being retained. They are more frequent in multipara than in primipara, but are sometimes very annoying in the latter cases. It is said they are more frequent if ergot has been used. Various means are used to relieve. Sometimes letting the patient sit up to urinate will help to dislodge clots, and many physicians recommend this as a routine practice to promote drainage. If the pains are sufficiently troublesome to prevent the patient getting needed sleep the doctor's attention should be called to the matter.

Bathing.—The general rule is a bath once a day for an obstetric patient, with at least a morning and evening bath for hands and face besides. The patient's wishes regarding the frequency of the bath should be considered, but cleanliness must be maintained. The hair should be combed every day.

Bowels.—Constipation is a common, almost universal, experience in such cases. The physician will usually order any medicine that is to be given. There should, as a rule, be a good movement within forty-eight hours after the birth, and each day thereafter.

If the breasts become engorged Epsom salt is often ordered to relieve the condition. Otherwise some simple, non-irritating laxative is given (castor oil is one of the best) and an enema as may be needed. Compound licorice powder or a compound cathartic pill are common cathartics in these cases.

Visitors are more difficult to control in this form of illness than in almost any other. As a rule, until the mother is able to be out of bed the fewer outside visitors admitted the better. Such patients do not crave visitors, as the baby is a source of never-failing interest. They are easily upset and excited, and rise of temperature, disturbance in the flow of milk, and other undesirable conditions not infrequently result from bad management of the problem of visitors. The physician should be consulted before visitors are admitted. His orders will greatly help the nurse to manage this matter without offense to family or friends. Letting visitors see the baby will often satisfy them and do no harm.

Getting out of bed is a matter for the doctor to decide. The tenth day is the time fixed for this event by the laity, but many physicians prefer to keep the patient in bed the full two weeks. Much depends on the individual patient and her condition. A change from the bed to the couch can usually be made in normal cases by the tenth day or before. Davis says, "So long as there is a free reddish discharge the patient should not be upon her feet."

The *nurse's reports* should begin with the labor if she is present at that time. Time of stages of labor, birth of child, sex, and weight should be recorded. If stitches are taken these should be noted. Pulse, temperature, respiration, condition of bowels, kidneys, lochia, breasts, milk, time of nursing, diet, and after-pains should be observed and recorded. The physician's attention should be called to rise in temperature, abnormal pulse, sleeplessness or headache, severe after-pains, changes in the amount, odor, or general character of the lochia; constipation, inability to urinate; pain or special tenderness in the abdomen if it continues for any length of time; any soreness of breasts or nipples; any swelling or pain in the limbs; any tendency to chills or complaint of chilliness; any special change in the flow of milk.

Diet.—For the first few days a light diet is usually prescribed for such patients. Thompson says, "the patient's own appetite is a better guide for feeding than are any rules as to the exact time which has elapsed since parturition. She should not be urged to take foods unless greatly exhausted, and the stomach must not be overloaded. The occurrence of fever is a contra-indication for giving much proteid food except milk, but extreme exhaustion without febrile reaction demands it."

The flow of milk should modify the diet to some extent. If the flow is very great and the breasts engorged, fluids should be restricted. If the milk secretion is deficient nutritious fluids should be increased. The nurse should remember that there is a possibility of increasing the quantity by adversely affecting the quality. Giving too much water, tea, or such fluids as do not really nourish is equivalent to pumping water into the milk pail to increase the quantity of milk. Buttermilk is one of the best fluids to use to increase the flow of milk. Gruel, cocoa, and broths thickened are also useful. The following dietary is arranged n[illegible] invariably in any case, but simply as a guide [illegible] as to suitable food and variety:

(Beginning twe[illegible] after the birth)

Breakfast:
Cereal and cream or gr[illegible]
Toast. Poached egg in [illegible]
Coffee or tea.

Lunch or noon meal:
Beef broth. Crackers.
Custard, baked.

[illegible] back.
[illegible], tea, or cocoa.

Supper:
Baked rice and cream.
Farina jelly.
Tea or hot milk.
Buttered toast.

THIRD DAY

Breakfast:
Cereal and cream.
Toast. Scrambled eggs.
Coffee, milk, or cocoa.

Lunch or noon meal:
Oyster soup and crackers.
Orange jelly.
Tea or milk.
Toast or bread and butter.

Supper:
Chicken or beef broth with crackers.
Milk toast.
Stewed prunes or apple sauce.
Milk or cocoa, bread and butter.

FOURTH DAY

Breakfast:
Cereal and cream.
Toast. Soft boiled egg, or
Chipped beef or sliced bacon.
Coffee or milk.

Lunch or noon meal:
Noodle soup and wafers.
Chicken,
Baked potato.
Baked sweet apple.
Bread and butter.
Tea or coffee.

Supper:
Cream of tomato soup.
Bread and butter. Prune-whip.
Tea, milk, or cocoa.

FIFTH DAY

Breakfast:
Orange or grapes.
Cereal and cream.
Toast. Creamed beef.
Coffee, tea, or cocoa.

Dinner:
Baked fish, cream sauce, or
Lamb chops, broiled.
Baked or mashed potatoes.
Tapioca cream.
Tea or cocoa.
Bread and butter.

Supper:
Blanc mange or boiled rice.
Buttered toast.
Creamed oysters.
Fruit.
Bread, butter, and tea.

CHAPTER XVI

THE NEWBORN INFANT

AN infant is termed newborn till the cord by which it has been attached to its mother has been entirely separated. At the time of birth the eyes and mouth of the infant are washed. When the cord is severed and regular respiration established the baby is received by the nurse or other assistant in a warm flannel. When possible it is desirable to have a warm sterile towel first wrapped round the infant before being wrapped in the flannel, a preventive of possible infection of the cord. It may then be laid aside in a warm place till the mother has been made comfortable. Care should be observed that there is an opening for air to reach the child, and for the first hour or two it is well to examine the cord at frequent intervals for hemorrhage. If flat tape has been used for ligating the cord there is more danger of leakage, and the loss of even a small amount of blood may be serious. In such cases no time should be lost in tying again above the first ligature.

The **first bath** may very properly be delayed a few hours. In fact, immediate washing is condemned by many obstetricians. Great physiologic changes take place in the little being in the first few hours or moments. The lungs unfold and the respiratory organs begin their functions. Great changes in the circulatory system take place, the opening between the auricles of the heart closes, and the blood begins to follow a different course. The blood itself undergoes a change. The kidneys, liver, and digestive organs share in the general process of readjustment to the new state of existence, all of which need to be considered, and which serve to show the wisdom of delaying the first bath for some hours. No bath, however gently and carefully given, can be managed without considerable handling, more or less shock to the nervous system in con

Preparatory to the should be smeared with warm olive oil, albole . Fresh lard can be used if none of these are at s is done a half hour or so before the bath the ch e (vernix caseosa) which is on different parts of th easily removed. Setting the bottle of olive oil in arm water for a short time will make it sufficiently warm.

The *room* should be well warmed—temperature above 70°F. Everything needed for the bath should be conveniently within reach before the baby is uncovered. The bath should proceed as rapidly and systematically as possible, the child being covered as much as can be arranged. Modern practice greatly favors the bathing of the child on a table, when conditions are such as to make this possible, the nurse standing during the bathing, the table being covered with a blanket and a towel. Less handling of the infant is needed when the table is used for bathing. A lower shelf may be used for the needed articles. First the head and face are washed, great care being observed to avoid soap entering the eyes. The softest material should be used for washing and drying. Unless the baby seems blue or chilled a tub bath is not advisable. The arms and hands, the chest, abdomen, the legs, and lastly the back, is washed, the water used being kept at from 100° to 106°F. throughout the bath. Gentle patting rather than rubbing is preferable when drying the skin. Powder may be used in the groin and under the arms. Eyes and mouth should both be cleansed during the daily bath.

Dressing the Cord.—The physician usually directs how the cord is to be dressed. The dry methods, using dry boracic acid, baked starch, talcum powder, or zinc oxid powder and sterile gauze, all have their advocates. Others prefer an oily dressing, such as balsam of Peru and castor oil or zinc ointment. Others saturate the gauze dressing with 95 per cent. alcohol after wiping the area around the cord with the alcohol. A dressing of sterile gauze is often used without any powder or antiseptic, the area and cord being first cleansed with 95 per cent. alcohol. The important thing is to have the dressings and material as nearly aseptic as possible—nurse's hands also—during the dressing. The stump of the cord is turned upward on the abdomen, and the dressing held in place by the abdominal band. The cord should in a few days be dry and shrivelled up, and should separate without leaving any erosion of the surrounding skin between the fifth and fifteenth day. As a rule, unless the dressing becomes wet or soiled, it is best to let it alone and disturb the drying stump as little as possible. If the healing around the cord is not perfect when it finally separates an oily dressing may be applied.

Clothing.—The band may be discarded when the cord comes off, but is usually worn from two to three months. In applying it see that it fits snugly and yet is not too tight. It should be sewed rather than pinned, and should easily admit a finger underneath it. A band too tight interferes with both stomach and lung expansion and causes much discomfort. The diaper also may cause discomfort by being too tight. It should be fastened to the shirt and not the band. The other articles of clothing should be put on with as little turning and handling as possible, the shirts being drawn up over the feet rather than down over the head.

Air.—The first immediate necessity of life for the newborn infant is air, and the nurse should insist on fresh air being admitted at intervals to the room in which the baby is kept. Holt emphasizes the necessity of fresh air for young babies, and believes it even more important than when they are older. To secure this the baby's mother and grandmother may need tactful management, but if care is observed to protect the baby from draughts objections can usually be overcome. As a rule, it is better for both mother and child that the child be kept away from the mother most of the time.

Water.—Every baby needs to have water given it at regular intervals, and this is especially true of newborn babies. Water is needed in the body if the organs are to properly perform their functions, and enough is not supplied in the mother's milk. The water given should be boiled and cooled (not too cold) and fed from a spoon or medicine dropper about every four hours during the day. Many little babies suffer much from thirst, and the lack of fluids in the body is a common cause of delay in urination.

Urine should be voided within the first few hours, and the nurse should make careful observation regarding this point. The first urine voided may be so small in amount that it might pass unnoticed. Very often there is a reddish deposit in the urine which on the napkin resembles blood. This is an evidence that the body needs more water to dilute the urine and flush the kidneys. If the nurse is faithful in administering water to the baby it is seldom that the time-honored remedy, sweet spirits of niter, will be needed to stimulate the urinary apparatus.

The **bowels** should move thoroughly some time during the day. For the first two or three days the movements have a dark appearance resembling tar. The term meconium is given to these first discharges. After the third or fourth day the character of the discharge changes. The color is lighter, somewhat brownish, occasionally greenish. By the end of the first week the movements are yellow in color. This is the normal color. The odor resembles that of sour milk and is not offensive. If the stools remain brown in color after about the sixth day it might be well to see whether or not the food is deficient. If the stools are foul smelling, slimy, or frothy there is some abnormal condition present. Castor oil is usually given if any laxative is needed.

Sleep.—The normal infant should sleep most of the time during the first few weeks. It should be roused at regular intervals during the day for its food, and from the beginning trained to sleep at night. The question of waking hours is pretty largely a matter of training in the first few weeks. A baby that is allowed to sleep all day will be more likely to be active and awake at night.

Nursing.—Until the flow of milk is established every four hours is often enough to allow the baby to nurse. The first milk acts as a laxative and helps to clear the intestines of the meconium which has been accumulating from the early months of fetal existence. Considerable difficulty is sometimes experienced, by primipara especially, in getting the baby to nurse, and often the attempt is abandoned in despair, a most unfortunate abandonment in many cases. Much of the difficulty is because the inexperienced mother does not know how to arrange for the business. She should lie on her side with the shoulders slightly elevated. A second pillow slipped under the head helps in the success of the operation. The arm should support the baby and the nipple be placed squarely in front of its mouth, so that it may take hold easily and be able to retain its grasp. If the breast is heavy it should be supported. If the nipple is small and flat it can be drawn out with a breast-pump or a bottle from which the air has been exhausted.

Trouble in nursing may come from too full breasts, depressed nipples, or because the milk supply is deficient or hard to get. Sometimes it flows more freely from one breast than the other; sometimes the baby seems too weak to nurse satisfactorily. It is never a good plan to resort to a nursing bottle in such cases, for the baby will soon learn that he can get the milk more easily from the bottle and refuse to try it from the breast. A little milk and water may be dropped over the nipple while the child is nursing to induce it to take hold. A hot wet-compress over the breast will help to make the milk flow more easily, or the flow may be started with the breast-pump, and when it is flowing the baby may be put to the breast.

If the baby is very tiny, weak, or premature the milk will have to be pumped out and fed to it. Patience will usually overcome difficulties in this matter. The establishing of regular habits of nursing at the very beginning will mean much in comfort for the mother and health for the baby. As a rule, for the first few months a baby should be nursed once in two hours during the day up till about 10 o'clock at night. Once between 10 P.M. and 5 A.M. is sufficient, and most babies can be easily trained to good habits. If the nipple is thrust in its mouth every time it cries digestive disorders and troublesome days and nights may be expected.

When the baby cries it may be due to thirst, and in that case water will relieve it. It may be too warm or too cold; its clothing may be wrinkled and uncomfortable or wet. Colic from overfeeding or indigestion may cause it. It may be hungry or it may be lonesome. Good experienced obstetric nurses believe that babies cry from a sense of loneliness, which is relieved by feeling an arm about them—often by speaking to them. Gentle patting while in the crib or turning over to the other side will often soothe them. Colic is often relieved by a drink of warm water, a hot flannel to the abdomen, gentle rubbing of the abdomen, beginning at the right groin and going up and around, or by laying them on the stomach over a warm water-bottle. If colic be persistent an enema of warm water may be needed. It is never a wise plan to practice taking an infant up each time it cries. Diapers can be changed while it is in the crib, and it can be taught to expect to stay in its crib when not needing special attention. At the same time discipline can be carried too far, even to the point of offending the entire family. Babies have turned out very well who have been humored in moderation by the nurse, and when it is hard to decide what is best it will be found it is better to err on that side than on the side of severity in discipline. Experience will teach many needed lessons, but the nurse who expects to be counted a success in obstetrics must learn how to get on well with the baby, and yet not to establish habits which spell trouble for the mother after she leaves.

Temperature, Pulse, and Respiration.—The temperature of an infant at birth is 99°F., and may range from 99° to 100°F. without any special significance. A temperature above 100°F. is pathologic, but very slight causes will produce variation. Holt has called attention to rise of temperature due to starvation which promptly subsides after feeding.

The *pulse* at birth is from 130 to 150, irregular, and also influenced by slight causes. It can be counted just in front of the ear rather more easily than at the wrist.

Respiration at birth is about 40. A well baby should breathe through its nose with its mouth closed. Even in well babies respiration is irregular and difficult to count accurately.

Weight.—During the first four or five days the infant loses in weight, which is usually regained in from eight to twelve days. Growth is retarded by impure air, poor nourishment, and other adverse conditions.

The Fontanels.—The smaller fontanel closes soon after birth, but the anterior fontanel remains normally open till the second year.

Caput succedaneum is the term applied to the swelling sometimes found on the head at birth, due to pressure and congestion of the veins while in the birth canal. It gradually disappears without treatment in a day or two.

THE PREMATURE INFANT

Few kinds of nursing are a greater test of a nurse's skill than the care of a premature baby without the aid of an incubator. It is a mistake, however, to settle down to the idea that very likely such babies will die. Even if the child does die (a great many survive and develop into strong, vigorous babies) her best efforts have been worth while.

The *first great essential* is to prevent heat loss, and for some weeks this is one of her most important duties. Such babies have a low vitality and very little subcutaneous fat. The first few days are especially important. If such a child is allowed to become chilled and cyanosed at birth, or in the first few days, the chances for its survival are small. Therefore special care must be used to prevent chilling. Plenty of hot water and a bathtub in which it can be dipped and warm towels and flannels should be in readiness when it is born. It is a mistake to wrap such babies in cotton batting or wool, unless covered with gauze. The body soon after birth should be rubbed with warm olive oil, and may then be wrapped in warm wool flannel. If a shirt is used it should be roomy and should open down the front.

The *clothes-basket incubator* is the one most easily available in the average home and hospital. Where specially designed incubators are to be had there will also be directions as to how to manage them. An ordinary clothes-basket, lined on the sides with a blanket with pockets for hot-water bottles, is about as good an arrangement as can be improvised hurriedly, but other methods give better results especially in winter. *An improvised incubator* made of a soap box, as follows, has given excellent results in some hospitals. These improvised incubators are used for all small or frail infants, whether of premature birth or not.

Take an ordinary soap box and knock one end out, gently, since they are rather flimsily constructed. Remove the lower half of the end, and put the upper half in place again, nailing a couple of strips, made out of the discarded piece, at the bottom or sides, to make stout support.

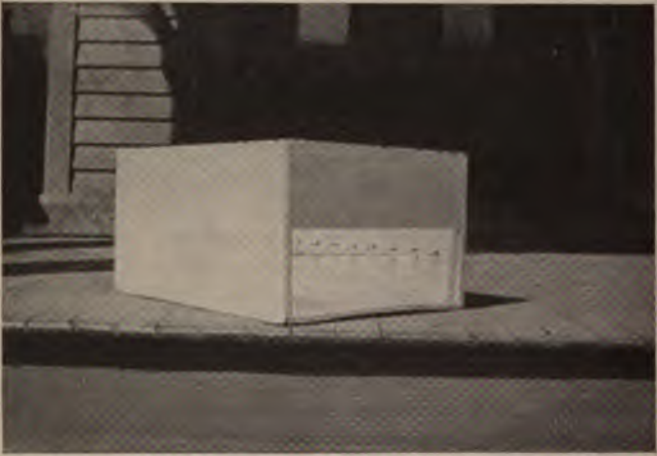

FIG. 60.—Improvised incubator. (Courtesy of "The Trained Nurse and Hospital Review.")

Inside the box, and *above* this opening, all the way around, screw in two dozen little brass picture hooks, eight at each side, and four at each end; crossing in both directions, string these with twine.

Underneath this quickly lay four hot-water bottles with covers, and fill at 120°, but only about two cupfuls of water in each, or a warm soapstone, or an electric warming pad, or bricks baked in the oven, or a warm stove lid on an asbestos mat, but do not let the box stand on a rubber sheet in any bed, since the continuous heat will soon destroy it.

On the cord lay a pad, then the premature infant wrapped *closely* in cotton, and old, soft blankets. In one corner of the box, near his head, hang a wall thermometer to show the temperature of his air.

Over the box lay a soft piece of blanket, leaving a vent at the head equal in space to the open, uncovered end at the bottom, for free passage of cool, fresh air which is to be heated, then rising about him.

If the hot-water bottles are regularly shifted and changed, the box can be kept at 90°, with the surrounding air at 60°.

Neither pillow for the head nor rubber sheets are needed.

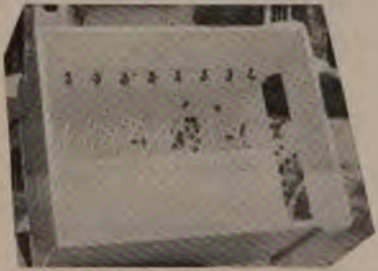

FIG. 61.—Improvised incubator showing arrangement of screw-hooks in soap box. (Courtesy of "The Trained Nurse and Hospital Review.")

Clothing.—De Lee recommends as clothing a simple bag, 34 inches long and 20 inches wide at the bottom, and without sleeves; a light wool blanket to cover the child, which can be brought around the head; an abdominal binder of wool, and a soft cotton diaper. Others recommend a shirt of flannel and a little flannel cap in addition. The gown shown in Fig. 62 is simple and quickly made of gauze and cotton quilted. Cap is made separately and sewed to upper edge. The baby wears, beside this, a flannel band and diaper. Many prefer to use also a fine flannel shirt opening down the front.

Cleanliness.—As a rule, oil rubs in the beginning take the place of regular baths till the child gains strength sufficient for a full sponge bath. The hands, face, and buttocks are gently sponged with warm water as required. Great care is needed, as the skin is so very tender that it is easily abraded or irritated.

Feeding.—Mother's milk is almost an absolute essential in rearing such babies. Till the baby is strong enough to nurse the milk must be pumped from the mother's breasts and fed from a medicine dropper. Till the mother's milk arrives some other food is usually ordered by the physician.

Fresh air is even more necessary for these infants than the normal baby, and many babies die in incubators because of insufficient ventilation. This fact has led to the condemnation of more than one costly incubator and many physicians prefer the home-made kind because of better ventilation.

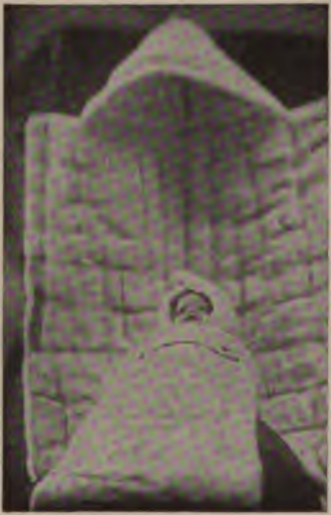

FIG. 62.—Gown for premature baby.[1] (Courtesy of "The Trained Nurse and Hospital Review.")

Infection.—The resistive powers of all such babies are very low, and they are more liable to infection of the eyes, cord, or infection from any source than ordinary babies.

All such infants should be handled as little as possible. As a rule, they cry but very little. Some authorities advise

[1] Infants Hospital, Boston.

putting the baby in the bed with the mother during the day, and state that they have found marked improvement when hot baths and artificial heat had failed to correct a subnormal temperature.

CHAPTER XVII

ACCIDENTS AND COMPLICATIONS OF PREGNANCY AND LABOR

The pregnant woman is subject to variations from health which occur as a result of pregnancy, such as nausea, difficult breathing, constipation, etc. In common with other women, she also occasionally develops general diseases, such as typhoid fever, tuberculosis, heart affections; surgical complications, such as appendicitis, tumors, or cysts of the pelvic organs, and also venereal diseases or the eruptive fevers.

Among the disorders or complications which not infrequently occur during pregnancy and labor are the following, with the management of which a nurse may have to become familiar:

Pernicious vomiting.
Abortion, or miscarriage.
Albuminuria.
Hemorrhage.
Swelling of the legs.
Faintness.
Melancholia.
Eclampsia.
Prolapse of the cord.
Post-partum hemorrhage.
Asphyxia.

Vomiting and Nausea.—A large proportion of women suffer from morning sickness in the early months of pregnancy. In most cases this disorder requires no special nursing. De Lee says, "If the patient retains most of her food, if the general health is not concerned, the physician usually is not alarmed, but prescribes only palliative measures." Such are:

"1. Waking the patient at about 6 A.M. and giving her a cup of coffee with a bit of toast, the patient resting an hour or two afterward.

"2. Counter-irritation over the stomach.

"3. The knee-chest position.

"4. Mild medicines, as oxalate of cerium and bismuth.

"5. Laxatives."

Ingluvin is a much-u [illegible] his form of vomiting.

Hyperemesis gravi [illegible] ssive vomiting during pregnancy, is a seriou [illegible] requires a high degree of skill in a nurse.

The following sym [illegible] d in these conditions: Persistent and freque [illegible] haustion; loss of sleep; salivation in severe cas [illegible] pulse, and hematemesis.

"The nurse will do well to study her case carefully. She should especially be aware of the bearing of the patient's nervous condition upon the vomiting. Loss of sleep, uncomfortable and exciting surroundings, previous nervous exhaustion, disappointment in the thought of being pregnant—all these are important considerations. The peculiar poison produced in the system of pregnant women may be the underlying cause of pernicious vomiting. This poison shows its effect in the action of the kidneys. To determine whether it is present or not the urine should be examined. A careful measurement of the daily output should be made and recorded."[1]

The important points in the management of such cases, as far as the nurse is concerned, are to see that the patient has the proper rest and quietness and that she receives food frequently in small quantities. The encouragement that comes from hopefulness on the part of the nurse has also much to do with controlling these cases.

Mental influence in these conditions is emphasized by Davis,[2] who says: "The words nausea and vomiting should not be mentioned to the patient. She should not be given a basin or towel in which to vomit, as many patients are made sick by such suggestions."

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[1] "Reference Handbook of Obstetric Nursing." (Wilson.)

[2] "Obstetric and Gynecologic Nursing."

De Lee says, "The nurse should detract the patient's mind from herself and from the idea of vomiting, wherefore the emesis basin should be hidden until actually required."

Feeding and **nursing** have much to do with the success of the general treatment. De Lee says, "The appetite is tempted with light foods, served in the daintiest possible manner, using the whitest linen and the prettiest dishes. At the beginning the following may be the dietary:

"Milk and lime water or seltzer, ice cold.

"A strong beef broth served in a cup, with salted wafers.

"Cold custard, rice and milk, with cinnamon.

"A sliver of white meat of chicken, with buttered toast.

"Strong oyster broth.

"Toast and hot milk.

"Ice cream and ices.

"Cream soups, with wafers.

"The food should be given while the patient is in the horizontal position, and she should be perfectly quiet for a few minutes afterward." If the condition progresses unfavorably liquid diet and rectal feeding are resorted to.

Therapeutic abortion is sometimes necessary to terminate the pregnancy in order to save life. The preparations for such treatment are similar to preparations for a major operation. Shock is always to be expected and measures for combating it provided.

Abortion.—"The expulsion of the ovum from the uterus before the sixteenth week of pregnancy is called by American obstetricians abortion; from that time to the twenty-eighth week it is commonly called miscarriage; and from the twenty-eighth to the fortieth week a premature delivery."[1]

Some medical writers have stated that about 90 per cent. of all pregnant women between twenty and forty have at least one abortion. It occurs most frequently in the third month, and is commonly believed to take place about the time the menses would ordinarily have appeared.

The *causes* vary, are sometimes avoidable and sometimes unavoidable. Among these are:

1. Various diseases characterized by fever, such as typhoid fever, measles, pneumonia, appendicitis, etc.

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[1] "Medical Gynecology." (Kelly.)

2. Diseases of the ovum or fetus.
3. Diseases of the uterus or appendages.
4. Displacements, such as retroversion, retroflexion, or prolapse.
5. Pelvic adhesions.
6. Diseases of the heart or circulatory system.
7. Syphilis.
8. Nervous disturbance or shock.
9. Injuries and operative procedures.

The immediate danger in abortion is from hemorrhage; the secondary, from septic infection and its results.

Preventive measures consist in removing the cause as far as possible. In cases where repeated abortions have occurred treatment should begin before pregnancy.

Symptoms.—The important symptoms are a slight flow of blood from the vagina and a sense of pain or uneasiness in the pelvis after the menses have ceased and pregnancy has begun. In many cases these symptoms, under appropriate management, subside, and the pregnancy continues without further interruption. Even large hemorrhages are not always followed by abortion.

When abortion is threatened[1] "it is a good plan to keep the patient on her back, with the foot of the bed elevated from 10 to 12 inches, and only a small pillow under her head. This posture reduces the influx of blood into the pelvic organs, and has a marked tendency to empty the veins. The importance of absolute mental quietude cannot be overestimated, nor too much impressed upon the patient's friends."

Opium in some form is usually given as an emergency remedy in small doses and often repeated; asafetida is given in many cases where treatment needs to be continued for a considerable time.

Hemorrhage.—In all such cases a physician should be secured at the earliest possible moment. If the bleeding is profuse. Davis recommends a vaginal injection of hot sterile water, Other authorities suggest packing the vagina with sterile gauze or cotton and giving an enema of hot salt solution. Other stimulants or hot drinks should not be used without special orders. Ice may be applied over the uterus. The patient should not be allowed to get out of bed or raise up in bed for any purpose. All napkins or discharges should be saved for the physician's inspection.

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[1] "Medical Gynecology." (Kelly.)

Convalescence after abortion is a much slower process than after a full-term birth. The latter is a natural process, the former a pathologic. Chronic diseases or conditions often result. In all cases there is the danger of infection from retained placental tissues or membranes. It is said that "most women at the time of an abortion or miscarriage are prone in an exceptional degree to infection." Hemorrhage after curettement in such cases frequently occurs.

Hemorrhage may be due to placenta prævia—the development of the placenta in the lower portion of the uterus near the cervix. This nearly always occurs within the latter three or four months of pregnancy. The first symptom may be a sudden flow of bright-red blood from the vagina, without pain. Quite often the onset of labor can be delayed. The physician should speedily be summoned and the patient put flat on her back and kept as quiet as possible. Most physicians give a hypodermic injection of morphin in such conditions and if the physician's coming is delayed a nurse will usually be justified in doing this if hemorrhage is alarming.

Hemorrhage as the result of ectopic gestation also occurs during pregnancy. The usual symptoms of internal hemorrhage and shock are present and intense pain in the abdomen when the rupture of the tube occurs. These are serious conditions, requiring immediate skilled treatment. The usual measures for checking internal hemorrhage can be tried till the physician arrives to give directions.

Albuminuria, the presence of albumin in the urine, is a common complication of pregnancy. More waste material than usual is formed in the body and the burdens on the kidneys are increased. Instead of the average amount of urine, from 40 to 50 ounces, the quantity voided in a day may decrease to 20 ounces or less, always a danger signal. Other common symptoms are headache above the eyes or at the back of the head; dulness and lassitude; swelling or puffiness of hands, eyelids, and feet; failure to perspire. In severe cases the symptoms of toxemia may include impairment of vision, slight loss of memory or confusion of thought, pain over the epigastrium, and oppressed breathing. In such cases the physician usually restricts the diet, stimulates the skin to activity by hot baths, packs, or other means, and endeavors to assist the system to throw off waste products through the bowel.

The *diet* in most cases consists mainly of milk, which the nurse should study to vary as far as possible by serving junket, cottage cheese, laban, kumyss, buttermilk, etc., instead of plain sweet milk.

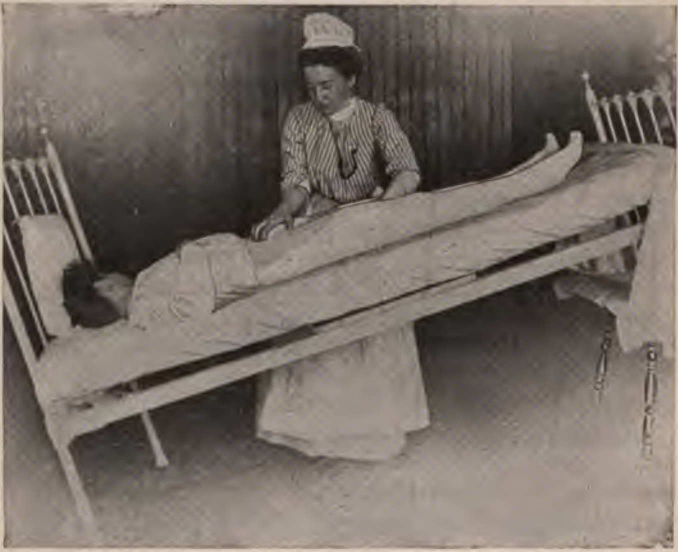


FIG. 63.—Treatment of post-partum hemorrhage, with bed elevated (De Lee).

The urine should be carefully measured and frequently examined.

Eclampsia is defined as the occurrence of convulsions followed by coma during pregnancy, labor, or the puerperium. It is probably due to imperfect action of the kidneys, liver, and general excretory system and the toxemia resulting from the retention of waste products. In almost all cases the kidneys are involved and there is an acute nephritis.

Symptoms.—A period of restlessness, headache, impaired vision, or spots before the eyes, nausea and twitching of the muscles of the face often precede the convulsion. The seizure usually begins with muscular twitching, gradually increasing in severity; foaming at the mouth, followed by a period of unconsciousness. The attack may be rapidly repeated.

The *nurse's duties* include first the prevention of injury to the patient during the seizures. To prevent biting the tongue a clothes-pin should be inserted between the teeth. False teeth should be removed. Absolute quietness in and about the sick-room must be maintained. Darkening the room is recommended.

If hot packs, hot bottles, etc., are used to secure perspiration care must be used to prevent burning. Narcotics, such as morphin or chloral, are often prescribed, and chloroform during the seizures.

Usually the convulsions subside when the labor is terminated, but occasionally persist afterward. Occasionally temporary puerperal insanity follows.

Swellings of the feet and legs and varicose veins frequently occur in advanced stages of pregnancy. Swelling is not always due to albumin in the urine. Pressure of the uterus interferes with circulation. In such cases the patient should be on her feet as little as possible. Garters, shoes, and waist bands should be loose; circular garters should not be worn. In cases of enlarged veins the feet should be kept off the floor. A neatly applied flannel bandage to the limb, worn during the day, is useful.

Faintness or sensations of fainting are frequent among pregnant women as a result of weakness or nervousness. Those who are subject to this trouble should avoid close or overheated rooms, crowds, or excitement. The crowding on street cars and in stores frequently conduces to this difficulty.

Melancholia is a not unusual complication of pregnancy, and acute mania sometimes develops. It is more common in patients of a neurotic type, and some writers believe it is aggravated by conditions of toxemia. The mental influence of a good nurse can accomplish much in these cases.

Asphyxia of the baby is one of the most frequent complica-

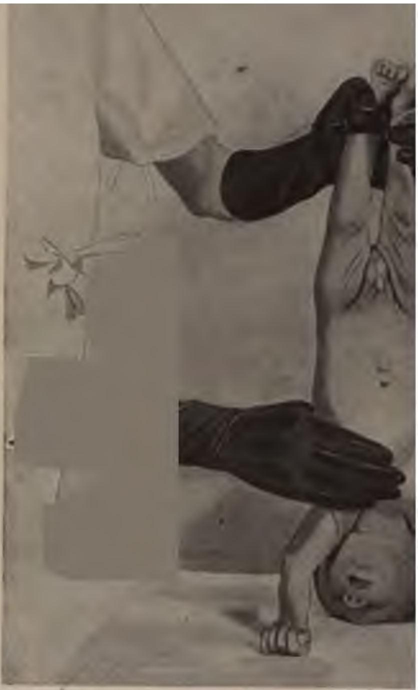


FIG. 64.—Resuscitation of an asphyxiated in

severe forms of asphyxia—called asphyx

the arms slowly well up over the head to cause the lungs to expand. The arms are then brought down slowly, slight pressure being made on the chest-walls, these movements being repeated about fifteen times per minute. This can be given with the child in a warm bath.

De Lee recommends the following: "The child is supported by the feet, with the forehead resting on a table, so that the head is pressed slightly backward (Fig. 64). Mucus, blood, etc., are removed from the fauces, and then with the thumb over the back and the fingers over the front of the chest the nurse makes light compression. This procedure is repeated twenty times a minute."

Oxygen has been used in such cases successfully, the stream from the oxygen tank being turned into the nostrils; also the blowing of air directly into the lungs through a tracheal catheter, or directly into the mouth, the nose being compressed. In all asphyxiated infants there is a danger of chilling from the prolonged exposure and of injury from too violent efforts at resuscitation. Warm flannels and receivers should be in readiness to receive it as soon as breathing is started. Close watch should be kept over such babies, for a secondary asphyxia sometimes develops. Whisky and water are frequently administered.

Regarding the length of time that efforts at resuscitation should be continued, Davis says, "So long as the child is red or reddish in color we must not give up hope nor discontinue efforts to bring about breathing." Other authorities recommend continuing the efforts for a half hour.

Post-partum hemorrhage, or hemorrhage after child-birth, not infrequently occurs from failure of the uterus to contract, or from retention of the placenta or parts of the placenta, or from laceration in some parts of the birth canal. There may be very little outward sign, owing to a clot or plug at the mouth of the uterus, but the nurse who is familiar with the symptoms of hemorrhage will be able to detect the condition. In case of retained placenta some physician should be secured from somewhere to remove it. Massage of the uterus through the abdomen, ergot, hot douches, packing the vagina, elevation of the foot of the bed, and hypodermoclysis are all used in dealing with this condition. If the uterus cannot be felt as a hard ball through the abdomen the nurse should suspect hemorrhage and use vigorous measures to stir up contractions.

In most cases hemorrhage occurs either following the birth of the child before the placenta is expelled or immediately following the birth of the placenta. Secondary hemorrhage, occurring some hours after the birth, is more rare, but the general measures for dealing with it are the same.

Such patients require skilled nursing for some time. A diet containing much nutritious fluid is usually ordered to increase the fluids in the system. There is also a danger of heart embolism following such cases, and vigorous friction of any part of the body should be avoided.

Prolapse of the cord occurs once in about 400 cases. In such cases the life of the child is always endangered, and no time should be lost in summoning a physician. A knee-chest position for the patient as long as she can keep such a position; the replacing of the cord; an elevated Sims position after the knee-chest position has to be abandoned, or a position with the hips elevated and the feet over a chair, are all recommended in dealing with this accident till a physician arrives.

Proper care of the baby's eyes is an important part of the nurse's duties. A large number of the cases of blindness which occur are due to infection of the eyes of the newborn. (See page 280).

The law in most states requires a physician to use prophylactic measures to guard against infection at birth. Gonorrheal infection is a common cause of this trouble, but other germs may cause ophthalmia neonatorum. Any redness or swelling of the baby's eyes should be regarded as a danger signal, and the physician should be notified. This will not usually be observed for a couple of days after birth, but infection may occur at a later period.

Preparations for obstetric operations do not differ materially from those required in other surgical procedures. The same careful attention to asepsis is needed. The most common obstetric operations are the repair of lacerated perineum, the delivery by forceps, and the induction of labor before the natural time.

After delivery by forceps careful watching of the baby for some hours or days is important. Asphyxia is very common in such cases, and preparation to deal with it should be made in advance.

CHAPTER XVIII

COMPLICATIONS DURING THE PUERPERIUM

THE puerperium begins when labor is completed. Uterine inertia, or failure of the uterus to contract after delivery, is a frequent complication, and is the chief cause of hemorrhage. This condition has been discussed under the heading of hemorrhage in a previous chapter.

Puerperal infection is a complication always to be feared. It may be local or general. A mild form is spoken of as a putrid intoxication, or auto-infection, and occurs as the result of the decomposition of some tissue within the uterus. A shred of membrane or placenta remaining within the uterus after delivery is a common cause. Infection through a fissure or laceration in the genital tract, or through the latter, if no fissure is present, is always possible.

Preventive treatment consists in the careful, conscientious observance of aseptic and antiseptic precautions. The nurse herself should never assume charge of such a case after a recent attendance on a case of infectious disease until thorough disinfection has been accomplished. Hands, solutions, instruments, appliances, and dressings are all possible carriers of infection into the genital tract.

Symptoms.—Usually the first symptom noted is rise of temperature, with or without a chill. Headache, coated tongue, a general feeling of discomfort, and some disturbance in the lochial discharge are all common symptoms in cases of septic infection. If the disturbance is local, or a mild form of infection, the lochia may not be greatly altered in amount, but is usually characterized by a foul odor. This condition is generally corrected by a curetting of the uterus and frequently by an intra-uterine douche. When the more severe form of infection is present there may be suppression of the lochia or a very scanty discharge, with more or less pain and tenderness around the uterus.

Management.—An important part of the nursing of such cases is the conserving of the patient's strength and developing of her natural resistive power by all possible means.

Nourishment is usually given in liquid form at the beginning of such a case. The food should be of the most nourishing quality, easily digested, and so attractively served that an appetite may be created for it. De Lee says if the stomach prove intolerant the strongest ally in fighting this disease is lost; therefore the nurse should exercise more than ordinary precaution to prevent vomiting and promote digestion. Milk may have to be peptonized and, in any case, should be carefully administered. Buttermilk, junket, kumyss, custards, concentrated broths, albumin-water, etc., are commonly prescribed. Usually there is some form of alcoholic stimulant ordered. Such patients bear large quantities of alcoholic stimulants well, but these should not be given with food. Salt solution by rectum or hypodermically is often given at regular intervals.

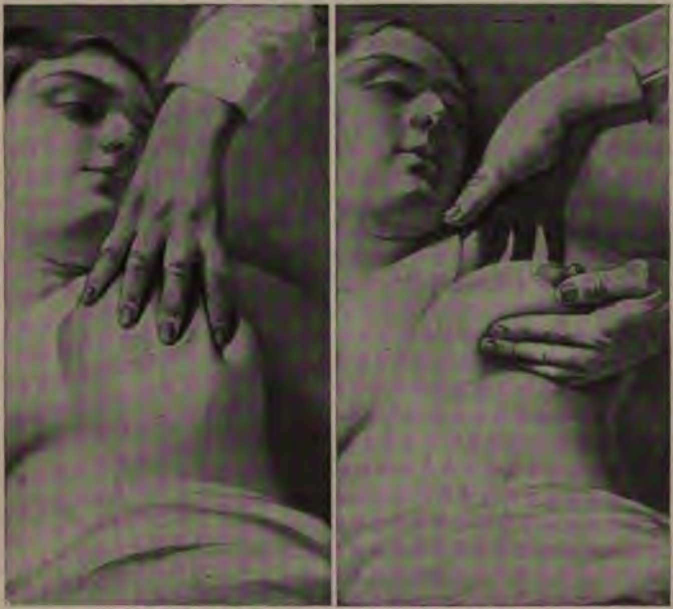
Nursing.—The general nursing of such cases does not differ greatly from the management of other fevers. Cold baths or packs are given to reduce temperature. It is desirable to decrease the amount of food given when the temperature is high, and increase it when the fever is reduced and the system better able to receive, digest, and assimilate it.

Great care is needed to prevent carrying infection from one obstetric case to another in hospitals, and also to prevent the nurse herself becoming infected through some crack or fissure on her finger. The hands should be well protected if a fissure or hang-nail is present. Vulva pads and dressings should be wrapped in old newspapers at once on removal and burned as soon as possible. Soaking in a 3 per cent. carbolic acid solution for two to three hours should be given to towels, gowns, and bed linen.

Symptomatic fever may occur from indigestion or constipation, mental disturbance, the beginning of lactation, or from some minor cause which can be easily removed. "There is no such condition as 'milk fever,' though the parturient woman is susceptible to variations in temperature from slight causes."

Auto-intoxication from the bowel is a frequent cause of rise of temperature, which promptly subsides when the intestinal tract is cleared out.

Phlegmasia alba dolens is a form of infection which results in obstruction in the veins of the legs. In this condition (commonly termed "milk-leg" by the laity) the limb is white, swollen, tense, and very painful. There is usually some fever in the beginning. The limb should be elevated, wrapped in cotton, and kept warm, but should never be rubbed unless rubbing is distinctly ordered.

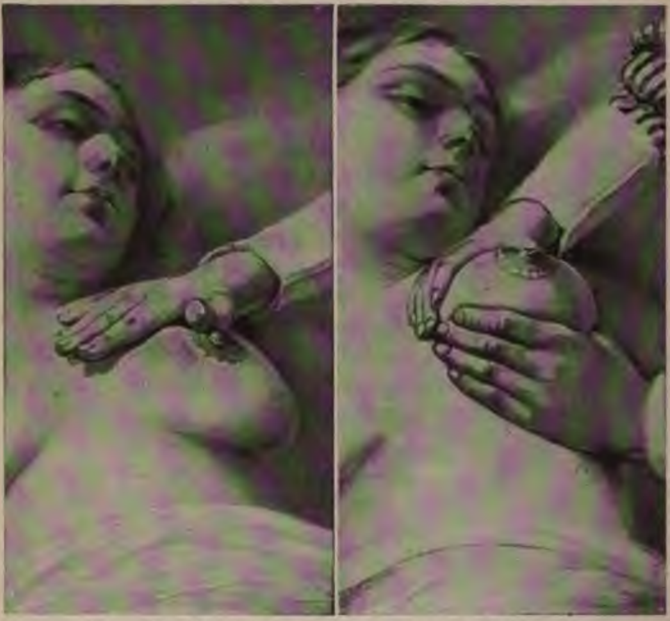


Figs. 65, 66.—Massage of the breasts (Dickinson).

Diseases of the breasts of greater or less severity are common experiences in obstetric nursing.

Engorgement of the breasts, which frequently occurs on the third or fourth day, is treated in a variety of ways. The application of an ice-cap, the bandaging of the breasts, a saline cathartic and restriction of liquids are common measures used to correct this trouble. Massage and the use of the breast-pump may be ordered, but no nurse should use either without a physician's order. De Lee says, "if irritated by too much or too rough massage, by breast-pumps, and too frequent nursing, the engorgement is slower going down."

Massage of the breasts begins with firm suppression of the gland with both hands. The breast should first be washed and anointed with some form of sterile lubricant. The nurse's hands are disinfected before beginning the treatment. Most authorities recommend beginning the movements at the outer edge of the breast and rubbing toward the nipple, using light motions to begin with, and gradually increasing the pressure. Sterile olive oil may be thoroughy rubbed in during the latter part of the treatment, which may be continued from ten to twenty minutes. Davis says, "the best test of the success of this massage is the relief which the patient experiences."



FIGS. 67, 68.—Massage of the breasts (Dickinson).

Mastitis, or inflammation of the breast, is caused by infection. It may be arrested by skilful management in the early stages, and suppuration avoided. Conditions which predispose to mastitis are fissures or erosion of the nipples or injury to the gland by too vigorous manipulation. The patient herself may infect the breast by improper handling when there is an open point for infection in the nipple. Abscesses occasionally occur in spite of the most conscientious and skilled care, though rarely.

Symptoms.—In these cases the inflammation is localized. There is pain in one part of the breast, redness, swelling, rise of temperature, and other febrile symptoms. Quite often a chill is the first warning signal, and the temperature may run from 103° to 105°F. If the temperature drops and the other symptoms subside inside of a day or two, as they often do, the formation of pus is unlikely. Massage in these conditions is never desirable. The usual treatment is by means of ice-caps to the breast, which are continued till the temperature is normal. The baby is withheld from the breast, which is supported by a tight bandage, and saline cathartics are given.

Fissured nipples, erosions, or ulcers of any kind require constant vigilance to prevent and careful management when they occur. Wilson says, "there is no condition confronting the obstetric nurse which shows more clearly, by the way she manages it, her training and skill than that arising from affections of the breasts and nipples." Careful inspection should be made every day of the nipples to detect any sign of ulceration or cracking, and especially if the nipples seem tender when the baby nurses. Such conditions should always be reported at once to the attending physician, who will prescribe some application. Nitrate of silver or compound tincture of benzoin are frequently used and some form of nipple shield ordered. It may be necessary to temporarily keep the baby from the affected nipple. When a nipple shield is ordered it should be sterilized by boiling before using. The use of lead nipple shields as a protection for the nipples between nursing periods is recommended by many physicians as a preventive of fissured nipples. These are hat-shaped discs, without holes. Through the chemical action of the lead in combination with the milk a form of acid is developed which is said to exert a healing influence and prevent infection and soreness.

Deficiency of milk may be due to lack of nourishment, general debility, worry, or some defect in the breast. General measures for improving this condition include careful attention to rules of hygiene, the avoidance of any cause for worry or mental depression as far as possible, daily baths, followed by brisk rubbing of the body, massage of the breasts with a view to stimulating the gland by gentle kneading between the fingers, and careful dieting. Very often when the patient gets out of bed and returns to normal habits the secretion of milk increases, and in any case every effort should be made to encourage the patient's mind, and continue the attempt to nurse until the physician orders it discontinued. Regular nursing by a vigorous baby is one of the best of all measures to promote milk secretion. Milk, buttermilk, and foods prepared with milk, such as oyster broth, tomato soup, cocoa, cornmeal and oatmeal gruel, given in addition to the regular meals, are milk-producing foods. Buttermilk will usually agree with patients who object to sweet milk or say it makes them "bilious" or constipated. It has produced the desired result in patients who had tried malt preparations, somatose, and other expensive foods and beverages in vain. Efforts to promote the milk supply are usually abandoned too soon. Very often, even after two months of discouragement, the condition of the breasts as regards milk supply markedly improves. Cases are reported in which after ten weeks of artificial feeding the mother has been enabled to nurse her baby, though this happy condition is rare. Breast feeding is often supplemented with artificial feeding until the mother's general condition improves, when frequently the milk increases until it becomes sufficient. This is more likely to occur if in the early life of the baby the mother has had fever to combat. In any case, efforts to nurse should not be abandoned for several weeks.

Drying up the milk is frequently necessary. The older measures commonly used consisted in restriction of fluids, a saline cathartic daily, the application of belladonna ointment, and a tight breast bandage. The tight bandage and belladonna ointment have been abandoned in recent years by some leading obstetricians, and the physiologic procedure adopted of allowing nature to put on her own restrictive bandage, which she usually does within thirty-six hours after engorgement. If pain is severe, an ice-cap may be applied or some sedative given. If breasts are heavy and pendulous, they are supported by a loose bandage, but without pressure. Massage and the breast-pump are prohibited and the patient is forbidden to handle the breasts.

Puerperal insanity is an unfortunate and somewhat rare complication of this period. It may follow toxemia or eclampsia and subside in a few days. It may persist for months, and occasionally the mental balance is never regained. This is more likely to occur in patients who have a family history of insanity. When possible it is well to advise sanitarium treatment for such patients, as most of them will do better when separated from their families. De Lee says, "There are three important parts of the nursing care of such cases: first, prevent the patient from committing suicide and killing the baby; second, procure sleep; third, keep up the nutrition." The majority of such patients recover eventually.

Points to Remember.—That every obstetric patient is a surgical case. The cord and navel until entirely healed should be considered and treated as a wound.

The mother's nipples should be treated as if they were clean wounds. An infected breast is practically always the fault of the nurse. A cracked nipple or red spot on the breast are danger signals.

Remember that clean air and plenty of water to drink are as necessary for babies as for adults. Keep warm, but not too warm.

A baby's eyes may become infected from its fingers or from a rough or not-too-clean head wrapping.

Important points in the care of premature infants are to begin early and to persist.

In caring for ophthalmic cases never use anything for one eye which has touched the other.

Report to the doctor scanty amount of urine; dull headache; edema of face and hands; any bleeding, either before or after delivery, which comes faster than drop by drop; a relaxed uterus; a rising pulse; foul lochia; cracked nipple.

CHAPTER XIX

GYNECOLOGY—COMMON GYNECOLOGIC DISEASES

Gynecology is the term used to designate that branch of medical science which deals with the diseases peculiar to women. Before beginning this study pupils are urged to review the chapter on the reproductive system, which deals with the anatomy and physiology of the organs concerned in gynecology.

The *principal organs* in the group of structures involved in gynecologic affections are the uterus, ovaries, Fallopian tubes, the vagina, the external genitals, the pelvic floor, the pelvic peritoneum, and the pelvic connective tissue.

Menstruation is the periodic discharge of blood from the uterus throughout the time of sexual activity in the life of women. The flow normally lasts from two to six days. The whole subject of menstruation is still but imperfectly understood, and there are many conflicting opinions as to its cause.

In reality the process of menstruation extends for about a week prior to flow and a week subsequent to it. For five to seven days there is increased blood supply in the uterus with a true increase in the mucous membrane (hyperplasia). Then comes the flow corresponding to a surface erosion, and, finally, comes the period of regeneration, lasting from five to seven days after the cessation of the flow, in which nature repairs the endometrium and makes it ready for pregnancy. Contrary to general belief, the actual flow does not represent "regeneration," for few tissue cells can be found in the discharge; between the end of the period of regeneration and the beginning of the next constructive stage is the period of quiescence (about twelve days).

Puberty is that period at which the girl matures and becomes capable of child-bearing. At this period there is marked development in the whole reproductive system. The menstrual flow, which is established at this time, is simply the outward sign of important changes, both physical and mental. These changes take place usually between the eleventh and sixteenth year, the age differing in different races, climate, and under different environments. The mode of life, the general health of the girl, and inherited tendencies influence this condition.

The Hygiene of Puberty.—At no time in life does a girl need more watchful care of her health than during the critical years between eleven and sixteen. A hygienic mode of life at this time would include plenty of fresh air and outdoor exercise, proper rest, and avoidance of exposure to cold or wet at or near menstrual periods, abundant plain nourishing food, regular hours of sleep, moderate mental training—in short, a régime that favors free physical development unhampered either by pressing mental work or by indolent habits.

Source and Character of the Flow.—Previous to each period the lining membrane of the uterus undergoes degeneration and the whole organ becomes congested. The degenerated membrane is cast off, leaving the capillaries exposed. These small vessels rupture, the escaping blood mingling with the cast-off epithelium, mucus, and secretions from the uterus and vagina. The flow recurs about every twenty-eight days, but there is great variation in the recurrence. Many women menstruate regularly every twenty-one or twenty-six days, and a few days earlier or later should cause no uneasiness. As a rule, menstruation ceases during pregnancy and lactation.

Amenorrhea, or absence of menstruation when it should normally recur, may be due to various causes. In the popular mind, it usually gives rise to more or less anxiety, and two common causes, pregnancy and tuberculosis, are often suspected. One of the most frequent causes is anemia, especially that form called chlorosis. Excessive fatigue and neurotic conditions also influence it. Other causes are typhoid fever, nephritis or pelvic disorders, luxurious life, obesity, exposure to cold or dampness near the menstrual period; severe nervous or mental disturbances, such as fright, sorrow, or excitement; lack of development in the generative organs; any debilitating disease, and changes of climate, occupation, or habits.

The *treatment* of amenorrhea depends on the cause. When due to anemia, the general health should be improved. When the suppression is due to exposure to cold, hot sitz-baths, foot-baths, and diaphoretic treatment are often prescribed.

Vicarious menstruation is a periodic discharge of blood from some part of the body other than the uterus, usually the nose. Its cause is not understood, but it is usually considered to be a neurotic indication. It is not of special significance.

Menorrhagia and Metrorrhagia.—The former is a prolonged or excessive menstrual flow occurring at the time when menses should appear. It is dependent upon conditions causing continued congestion in the uterus, such as endometritis or subinvolution.

Metrorrhagia differs from menorrhagia in that it occurs independently of the menstrual period and need not be great in quantity. It is usually serious, indicating cancer or extra-uterine pregnancy. The occurrence of a "menstrual flow" after the change of life has been completed some time is usually indicative of malignant new growth. Common causes are subinvolution of the uterus, retained secundines, polypi, carcinoma, and an unhealthy condition of the lining of the uterus. The last is the most frequent cause.

Dysmenorrhea, or painful menstruation, may be neuralgic, inflammatory, or obstructive. The latter is a very common type, and is due frequently to a slight displacement of the uterus which narrows the cervical canal and obstructs the flow. In many of these cases the pain is greatest just before the flow appears. A high rectal injection of a pint of hot saline solution will often afford great relief, dilating the blood-vessels and stimulating the flow. In severe cases about 40 grains of sodium bromid is sometimes added to the salt solution. Heat externally and a hot mustard foot-bath, using a small tablespoonful of mustard to a bucket of water, are helpful in all such cases.

Other remedies used for the relief of dysmenorrhea are pessaries (Fig. 85) to correct the displacement; electricity; operative treatment, usually dilatation of the cervix with or without currettage. The latter is by no means a sure corrective, and statistics go to show that only about 40 per cent. are helped by it, many of those but slightly and for a time. Careful attention to the general health, plenty of exercise, sleep, nutritious food, and systematic regulating of the bowels are necessary to permanent improvement. Many physicians advise the use of a cathartic daily for three or four days previous to the time the flow is expected.

The menopause, or climacteric, or change of life, is a term used to designate the time of cessation of activity of the reproductive organs, and marked by a cessation of menstruation. In healthy women this period usually occurs between the years of forty-two and fifty, but may occur earlier or later. It is characterized by a gradual atrophy and diminution in size of the generative organs. Usually the menses cease gradually, the flow becoming less free, shorter in duration, and recurring at longer intervals. This natural irregularity may continue for two or three years, the flow stopping often for two or three months and then reappearing till it finally ceases entirely. The symptoms associated with menopause are classified as ervous, gastro-intestinal and vasomotor. Most commonly here are only the hot flashes with sweating; occasionally there palpitation; tendencies to insanity and other nervous disders are particularly exaggerated at this time. Many mptoms which are ordinarily considered as part of the natural ocess are pathologic and require investigation. When there increased menstrual flow at this time or bloody discharge tween the periods, leukorrhea, pelvic pain, or marked nervous turbance, a physician should be consulted.

"For some years an idea has prevailed not only with the y, but among physicians, that a tendency to menorrhagia metrorrhagia occurring at the menopause is a necessary which may be safely left to time. Nothing can be more neous or more productive of harm than this point of view."[1]

A large majority of gynecological patients suffer from tipation which greatly aggravates their disease. Accutions of feces push the uterus out of place, retard the lation of all the pelvic organs, and produce general anemia o toxin absorption. In the selection of laxatives those be preferred which will give a normal daily evacuation bowels."[2]

normal Positions of the Uterus.—Of these the most comre retroversion and retroflexion, anteflexion and prolapse. The uterus in its normal position is suspended or swinging between the broad ligaments, with the fundus inclined slightly forward and the cervix turned backward toward the hollow of the sacrum. The normal uterus is freely movable, and is subject to change of position as the bladder is full or empty.

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[1] Kelly, "Medical Gynecology."

[2] Inter. Jour. of Surgery.

Anteflexion, in which the uterus is bent forward on the cervix with rigidity at the point of flexion, is often congenital, or due to imperfect development, and is a frequent cause of dysmenorrhea.

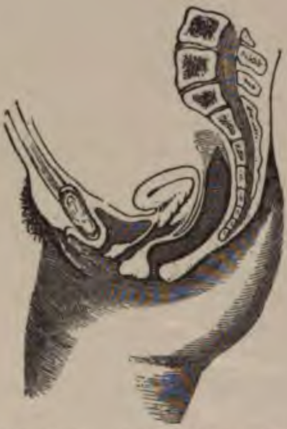

FIG. 69.—Anteflexion of the uterus (Schroeder).

Retroversion and *retroflexion* are among the most common of all gynecologic affections. Treatment is usually unnecessary unless the uterus is adherent or the general health is seriously interfered with.

Where there is pelvic pain, irregular or profuse menstruation or severe dysmenorrhea, some treatment is required. Common symptoms are a feeling of general lassitude, dragging pains around the pelvis and in the back, constipation, profuse, painful or prolonged menstruation, occasionally frequent urination, sometimes leukorrhea, and often more or less nervous disturbances.

Prolapse of the uterus is a downward displacement of the uterus. It may be due to relaxation of the ligaments of the uterus and a general unhealthy condition of the organ, causing increased weight in it, to lack of support in the pelvic floor, such as is caused by laceration of the perineum, or to intra-abdominal pressure. Predisposing causes are difficult labors, subinvolution, laborious occupations involving heavy lifting, and advancing age. Pessaries (Fig. 85) are often used to afford temporary relief, and operative treatment is resorted to for permanent correction of the condition.

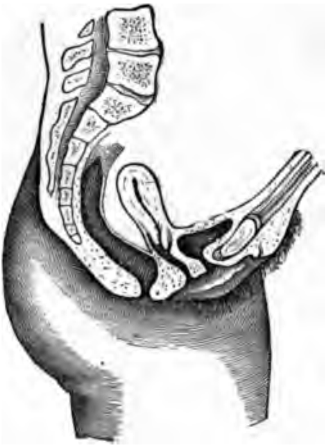

FIG. 70.—Retroversion of the uterus (Schroeder).

Cystitis.—Inflammation of the bladder, while not peculiar to women, is a frequent complication of gynecologic diseases, and often occurs as a distressing sequel of operations involving the generative organs of women. A common cause is the use of the catheter in unskilled or careless hands. The need for special precaution to prevent infection of the bladder following child-birth and pelvic surgical operations should be always kept in mind.

During child-birth the bladder is usually more or less injured; the resistive power of the patient is lowered, especially if the labor has been difficult, and the patient becomes an easy prey to infection which normally she would easily throw off. The position in bed is unnatural, making it more difficult to empty the bladder, the vulva and surrounding parts are often swollen; the lochia may become a source of danger, and the whole condition shows a predisposition to cystitis if thorough aseptic precautions are not observed.

After Pelvic Operations.—Conditions which predispose to cystitis after pelvic operations are many. Dr. Howard Kelly[1] mentions the following, which are commonly present in a patient who has undergone an abdominal operation, say hysterectomy, for carcinoma of the uterus:

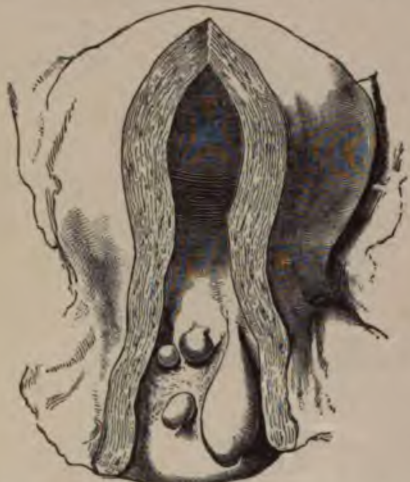

Fig. 71.—Group of mucous polypi growing out of the cervix uteri (Sir J. Y. Simpson).

"1. A depressed state of health before operation.

"2. Often a condition of severe mental depression.

"3. A severe mutilating operation.

"4. Severe trauma exercised upon the bladder itself.

"5. In most cases, protraction of the operation, which taxes the vital forces to their utmost.

"6. Considerable, sometimes excessive, loss of blood.

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[1] "Medical Gynecology."

"7. In the case of carcinoma, injury of the bladder at the point of detachment from the uterus and the vagina, an injury which must heal by suppuration during long convalescence.

"8. Constraint of posture after operation when the patient lies on her back and is unable to empty her bladder properly on account of the unusual position, so that there is either an overdistention or a residuum of urine after voiding.

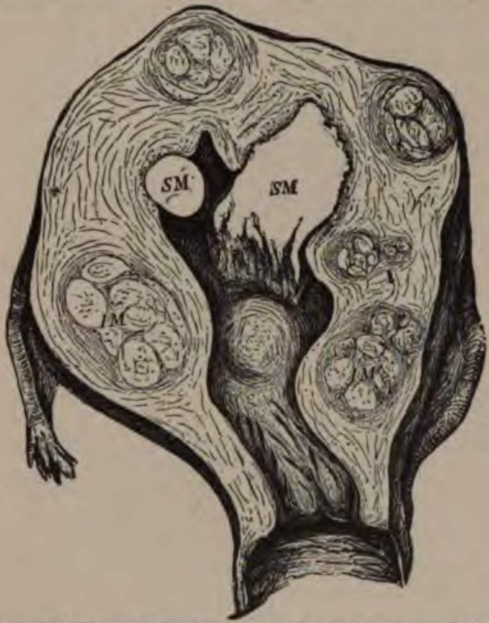

Fig. 72.—*IM*, Interstitial fibroids; *SM*, submucous (Schroeder).

"9. Complications during convalescence, causing elevation of temperature, which further lowers resistance."

Preventive treatment includes "careful watching of the bladder to make sure that it does not become overdistended, atonic, and liable to accumulate large amounts of residual urine which is prone in the weakened condition of the patient to become foul" (Kelly). Avoidance of the catheter, unless imperatively demanded, and a thorough aseptic technic if the catheter is used, are important.

Washing of the bladder, the technic of which is best taught by demonstration (see page 253), is a common method of treatment.

Tumors involving the generative organs may be benign, consisting of fibrous tissue or of fat or of hypertrophied gland tissue, or they may be malignant, as in sarcoma and carcinoma.

Carcinoma, or cancer of the uterus, has been the subject of much study and investigation in recent years, and the cause is still to be positively proven.

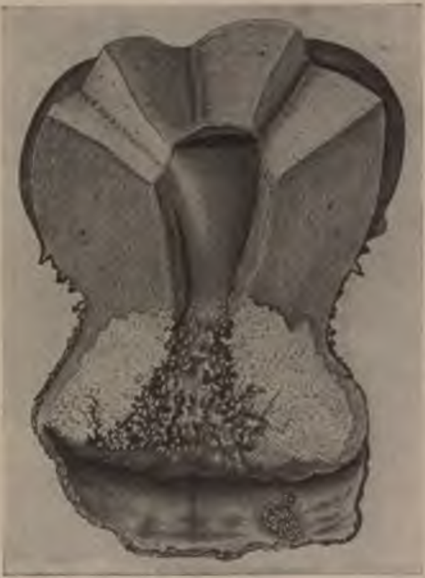

FIG. 73.—Cancer of the cervical canal, with metastasis to the vagina (Penrose).

The most important things for nurses to know about it are the early symptoms, so that they may assist in early recognition of the disease. These facts have been clearly and concisely stated as follows:

"Four symptoms that stand out prominently in cancer of the uterus are: hemorrhage; discharge (leukorrheal or watery, and these may precede the pain); pain; general constitutional symptoms.

"1. Cancer of the uterus is prone to occur between the ages of thirty-five and fifty-five. It may in exceptional cases come earlier or later.

"2. It is a local growth at first and curable in its early stages.

"3. Irregular and unusual uterine bleeding at any time of life, but more especially between the ages of thirty-five and fifty-five, is a symptom requiring investigation.

"4. The return of the flow after the establishment of the menopause is one of the gravest of symptoms.

"5. Leukorrhea is a symptom of diseased condition requiring investigation, but too frequently neglected.

"6. Change of life means cessation of menstruation, and increased flow at a time when menstruation is expected to cease is a danger signal.

"7. Pain is a symptom that appears late, and should not be expected or looked for as a sign of cancer in the early stages."[1]

VENEREAL DISEASES

Chancroid and syphilis are called venereal diseases because they are usually communicated in sexual intercourse. Any of them, however, may be otherwise contracted, and syphilis is very frequently contracted by other methods.

Gonorrhea is inflammation of the genital organs due to the gonococcus germ, which is found in all acute discharges from surfaces so infected. The term "gonorrhea" in the female when not qualified is understood to mean gonorrheal inflammation of the vulva, vagina, and urethra. If the inflammatory process extends into the uterus or the Fallopian tubes or bladder it causes serious complications, known, respectively, as gonorrheal endometritis, gonorrheal salpingitis, and gonorrheal cystitis. In many cases gonorrhea extending upward leads to extensive inflammation of the uterus tubes and ovaries, causing months and years of suffering, producing sterility, and necessitating serious operations. It is said that about 80 per cent. of female pelvic diseases are due primarily to gonococcus infection. It is particularly difficult to cure in the female, and she may remain capable of infecting others during the lifetime of the individual, especially during acute exacerbations which occasionally occur.

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[1] Dr. S. M. Hay.

Gonorrheal vulvovaginitis in little girls is unfortunately too common an occurrence. The infection may be due to sleeping with an infected individual or to contact with infected utensils or hands. In institutions it may be almost epidemic, despite vigilant care.

All *gonorrheal discharges* are capable of causing gonorrhea, even the slight discharge from chronic cases, which often persists for months and years. Gonorrhea may be acquired by means of infected vaginal nozzles, bed-pans, or closet seats, through infected towels, or other materials containing the infectious germs.

Symptoms.—Usually the inflammation begins within two or three days after contact with infected materials. There is first abnormal dryness of the parts and later a slight secretion, which increases in amount till a free yellow discharge results, which causes much irritation of adjacent surfaces. Other signs of inflammation, pain, heat, redness, and swelling are also present.

Prophylaxis.—The important thing for the nurse to constantly keep in mind is the infectious nature of this discharge and the possibility of transmitting the disease to others or acquiring it herself. Gonorrheal inflammation of the eyes is exceedingly serious, and many eyes have been destroyed thereby. After each contact with infected bed-linen, clothing, or utensils, and each treatment of the genitals the hands should be carefully cleaned so that no infection may be carried by them to the eyes or other vulnerable points. The vulva pads should be large enough to absorb all discharges, and these should be wrapped in newspapers and at once burned. When doing dressings or giving treatment in this disease it is a wise precaution to wear rubber gloves, which can be at once sterilized. All bed- and body-linen from patients having gonorrheal discharges should be disinfected and separate nozzles, bed-pans, and utensils kept for such cases.

Chancroid is a local disease consisting of one or several sores occurring about the genitals. It is due to infection of an abrasion with virus from another chancroid. It has no relationship to gonorrhea or syphilis and is entirely local—*i.e.*, it is not a "blood disease." The local manifestations are painful and destructive. The inflammation is virulent, the sore enlarges, and many new ones appear from time to time through infection of the skin from the first sore. As the chancroidal sore has no particular hardening about the base, it is often spoken of as a "soft chancre," in contra-distinction to the primary sore of syphilis, which is known as "hard chancre."

Syphilis is a general disease now known to be caused by a germ, the Spirochæta pallida. It is constitutional, affecting the blood and every organ and tissue of the body. The virus may enter through any scratch or abrasion or raw surface of skin or mucous membrane. No immediate disturbance is manifested at the point of infection. The period of invasion lasts from ten days to three weeks. Then signs of inflammation and a small sore appear at the infected point, which becomes hard. The lymphatic glands enlarge around the area involved. This sore presenting the hard base is known as a "chancre" or hard chancre, and is the primary or initial lesion of syphilis.

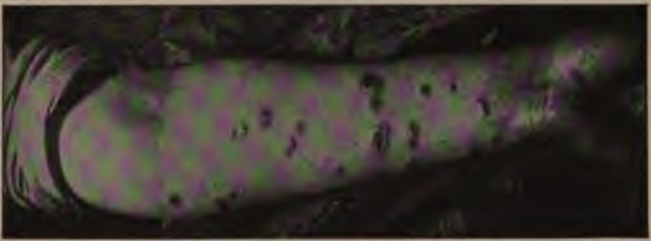

FIG. 74.—Large pustular syphiloderm (Stelwagon).

After this sore appears there begins a period of apparent quiescence, which may last from four to twelve weeks. At the end of the second period of incubation there are decided general disturbances and constitutional symptoms are usually manifested. These may be severe, moderate, or even escape notice. Common symptoms are a characteristic eruption, general glandular enlargement, loosening of the hair so that much comes out in combing, persistent sore throat, sores in the mouth, general aching, slight fever, and frequently numerous superficial sores about the genitals. This is called the secondary stage, and a patient so affected is a source of great danger to all around. Separate drinking glasses, tableware, and utensils of all sorts should be provided, and the most careful methods of disinfection practised. The infectiousness of the disease continues about two years, and the disease itself for a much longer time—in some cases for life.

The *three stages* of the disease are known as primary, secondary, and tertiary. The secondary stage may vary in length from one to three years, during which many forms of lesions are found. Syphilitic skin diseases are common, and eruptions may appear on any part of the body.

In the *tertiary stage* any organ or tissue of the body may be the site of manifestation of the disease. Tertiary symptoms often do not appear marked. They involve chiefly the skin and bones. In the visceral organs, nodules, called gummata, may appear. A detailed description of the various tertiary symptoms is impossible here.

The length of the tertiary stage depends to a large extent on the treatment, and the disease is supposed not to be infectious in this stage.

Congenital syphilis in the child may be due to syphilis in either parent. The power of influencing the health of the child may persist far into the tertiary stage, long after the power of infecting other individuals is passed.

Venereal warts are of two types: the pointed being a manifestation of gonorrheal infection and occurring about the genitals alone; the broad being a manifestation of secondary syphilis and occurring about the genitals, anus, and, rarely, the mouth. They are caused by contact with infecting secretions.

Chancre of the face is frequently caused by kissing or by the use of infected shaving utensils. Chancres are also found on the fingers, nipples, eyelids, tongue, nose, and throat.

Bubo is a term used in designating an inflammatory swelling of a lymphatic gland, particularly in the axilla or groin. The term is usually applied to an inflammation in the inguinal glands alone, caused by a wound about the genitals, as chancroid, severe gonorrhea, or secondary infection of a chancre. Bubonic plague is an illness characterized by general lymphatic gland swellings. It is caused by the Bacillus pestis. Rats, flies, and other insects are active agents in its spread.

Management of Venereal Diseases.—*Syphilis* in the acute stage is treated with mercury in some form, either given by mouth or by inunction through the skin, or by injections directly into the gluteal muscles (intramuscular injections). In many cases this treatment is supplemented with salvarsan ("606"), given preferably by injection into a vein; although it may also be given in an intramuscular injection. Potassium iodid, arsenic, and "tonic" drugs are also used. Too much stress cannot be laid upon the avoidance of the contagion.

Chancroid, being purely local, is treated by surgical dressings.

Gonorrhea.—The treatment is necessarily in the hands of the physician; the nurse's duty chiefly lies in the careful giving of douches and the prevention of contagion.

Prophylaxis through Education.—At the present time a campaign of education is being waged by a society organized for the purpose of preventing venereal diseases. Two essential features are emphasized in the objects of this society: "publication of evils which have always been covered up and concealed" and "sex instruction." It is said that, "excluding the abandoned or vicious class, practically all women who acquire syphilis receive the infection from their husbands," and that "the basic cause is ignorance." There are many ethical questions involved in such a campaign and nurses may properly be cautious about discussing the subject; but, at least, they should read the available current literature bearing on the question and exercise all possible diligence to prevent the spread of the disease in their own practice.

CHAPTER XX

GYNECOLOGIC TREATMENTS

BEFORE gynecologic treatments are given or prescribed an examination must be made. Among the first of the nurse's duties in connection with such an examination is the arrangement of the patient for it. To do this satisfactorily she must know the different positions used for such examinations, be able at once to place a patient in the position desired by the physician, and to do it with the least possible exertion on the part of the patient. Before such an examination the bladder and rectum should always be emptied.

The **methods of examination** may be either non-instrumental or instrumental. The non-instrumental methods include inspection of the external genitals, external abdominal examination, a bimanual examination, or one performed with both hands; a rectal, and a vaginal examination.

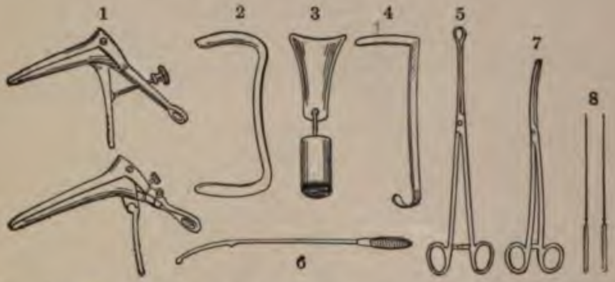

FIG. 75.—Instruments required for gynecologic examination: 1, Bivalve specula; 2, Sims's speculum; 3, weight speculum; 4, vaginal retractor; 5, tenaculum forceps; 6, uterine sound, 7, dressing forceps; 8, applicators (Macfarlane).

For the *instrumental method* of examination the instruments commonly required are a speculum and a pair of uterine dressing forceps. If the examination is to be made under anesthesia, in addition to the instruments mentioned there may be needed tenaculum forceps, scissors, uterine sound, catheter, cotton or gauze swabs for wiping away secretions, a basin of disinfectant solution, some form of lubricant for the physician's hands, a clean towel, and a pus-basin, or a receptacle for receiving soiled dressings. A sheet for draping the patient's limbs should also be in readiness.

Before such an examination the bladder should be emptied; the rectum also if there is need or time. The vulva should be washed off, the clothing should be clean and arranged so as not to interfere with the fullest examination. If a patient consults a doctor at all, she owes it to him and to herself to give him every possible assistance in examination and diagnosis.

Position.—The attitude or posture of a patient is exceedingly important in examination or treatment.

In the *dorsal* (or dorsal recumbent) *position* the patient is on her back. Quite frequently the physician, in order to get a better light and a better view of the parts, will want the patient in this position crosswise on the bed, with the pelvis brought to the edge. If on the table, the hips are brought to the foot, and some form of support must be provided for the feet.

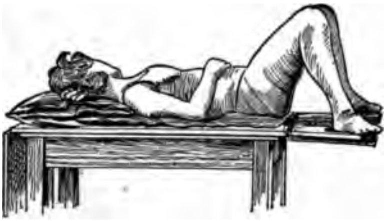

FIG. 76.—Dorsal recumbent posture.

In the *lithotomy* (or dorsosacral) *position* the patient is on her back, with the legs flexed on the thighs and the thighs on the abdomen. Two nurses assist in supporting the legs in this position, or a leg-holder, passed under the knees and around the neck, is sometimes used.

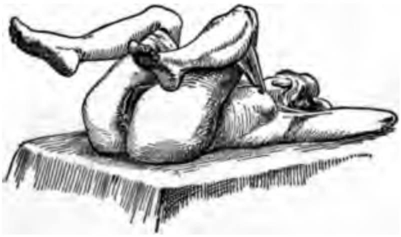

FIG. 77.—Dorsosacral posture, with leg-holder applied.

In the *Sims's position* the patient is on her left side, the left arm behind her, the chest resting on the table, the hips brought to the edge of the table or bed, and the right knee and thigh drawn upward.

The *Edebohls' dorsal position* is commonly used in operations on the perineum or cervix. In it the patient is on her back, with her limbs suspended by leg supporters and widely separated.

In the *knee-chest position* the patient is on her knees with hips elevated, the body resting on the knees and chest. This position allows the organs of the abdomen and pelvis to gravitate upward, and is much used in dealing with uterine displacements and the adjustment of pessaries.

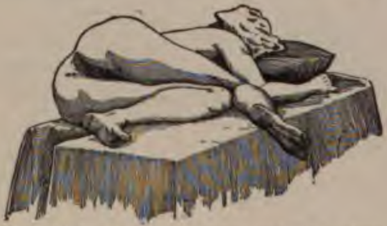

FIG. 78.—Sims's posture, anterior view.

The *Trendelenburg position* is used frequently during operations. In this position the patient is on her back on an inclined plane, with the legs and feet hanging over the edge of the table. The nurse who is at all on duty in the operating-room should familiarize herself with the mode of adjusting the operating-table, and patient in this position.

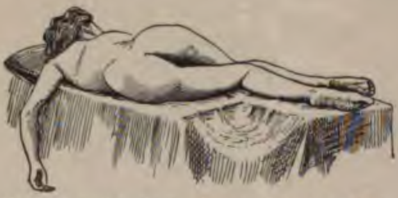

FIG. 79.—Sims's posture, posterior view.

Fowler's position is frequently used after operations on the pelvic organs where sepsis is feared and free drainage is desired. In Fowler's position the patient is supported in a semi-erect posture by back-rest and pillows. In many hospitals a special swing or rest has been made to prevent the patient from slipping and add to her comfort while in this position. This can be improvised by securing a thick board about 8 inches wide and as long across as the bed, under the patient's hips, padding it so as to make it comfortable, and attaching it to the head of the bed with ropes or straps. With this device and the back-rest and from five to seven pillows a very ill patient (as most patients kept in Fowler's position are) can be kept in a fair degree of comfort.

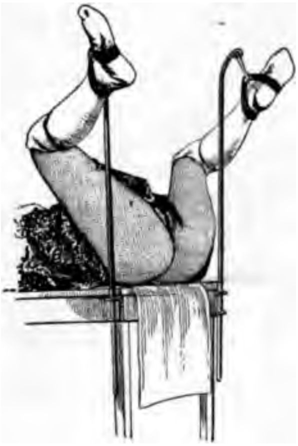

FIG. 80.—Edebohls' dorsal posture.

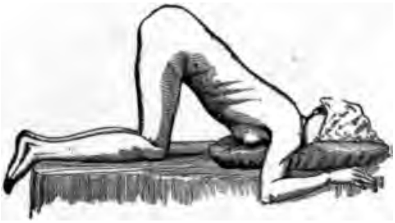

FIG. 81.—Knee-chest, or genupectoral posture.

Another simple method of support is to place a folded draw sheet or rolled blanket under the flexed knees, having the ends fastened to the head of the bed on each side. Bed-frames which are adjustable, so as to comfortably support the patient in this position, are now to be had.

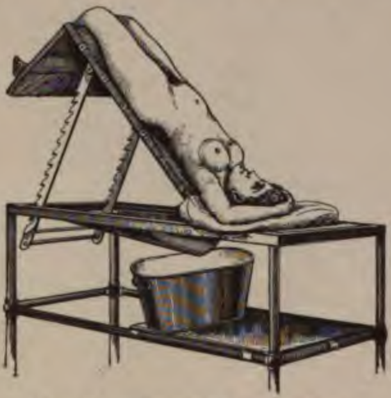

Fig. 82.—Trendelenburg posture.

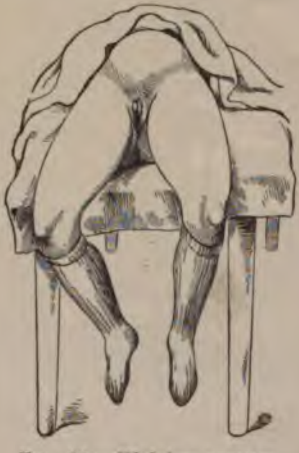

Fig. 83.—Walcher posture.

The *upright position* is occasionally required. For examining in this position the patient is standing, a sheet draped around the lower limbs, and one foot is elevated, resting on the rung of a chair or a stool.

There are various modifications of these positions, but a nurse who knows how to quickly and easily adjust her patients to the positions here described can readily adapt herself to any ordinary requirement in this line.

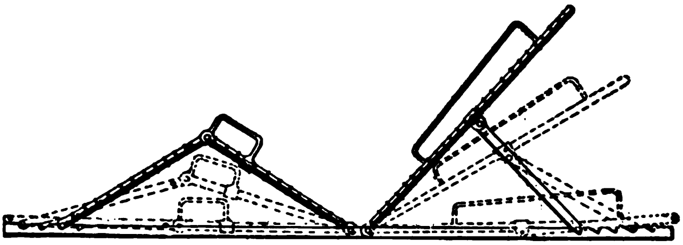

FIG. 84.—Adjustable bed. This device is designed to keep patients in a particular upright or incline sitting position. It is useful especially in the treatment of peritonitis and abdominal cases. The bed is made entirely of metal. It is intended to rest on the springs of a standard ward bed, and any mattress of soft material can be bent and used on this bed, which is 6 feet long and 33 inches wide. The back-rest is separately adjustable, while the seat and leg-rest are adjustable together; the steel wire is mounted on metal frames, which are adjustable on bed-frame, made of steel angle-bars, enameled white, and is perfectly sanitary. The construction permits the bed and the patient to be laid flat, or to be set to any angle of elevation desired, and the bed holds the patient in a permanent position, without risk of slipping.

A **douche** is a stream of water, medicated or otherwise, directed against a part or into a cavity.

The *vaginal douche* is given for purposes of cleanliness, to check hemorrhage, arrest inflammation, as an astringent, to contract tissue and check secretions, to relieve pain, and as an antiseptic to promote healing of wounds or abraded surfaces. It usually contains a mild antiseptic, such as boric, or borosalicylic acid, lysol, carbolic acid, etc. An important point in the giving of such douches is the temperature. The hot vaginal douche, given to check hemorrhage, should be as hot as can be borne—usually from 110° to 115°F. When given for the relief of pain or to arrest inflammation, the hot douche will be more effectual than a tepid douche. The temperature should be tested with a thermometer. When given for cleansing purposes a temperature from 98° to 105°F. may be used.

Astringent douches, in which alum, tannic acid, or some astringent drug is used, are employed sometimes in cases of leukorrhea or relaxed vaginal walls.

Quantity.—The quantity of fluid is also important, as well as the speed at which it is given. In many cases the prolonged effect of the heat is the chief thing desired, and the nurse can easily miss the main object by allowing the fluid to flow too quickly or using too small a quantity to be of any use. In most cases a gallon douche is preferable to a smaller quantity.

Position.—Douches are commonly resorted to by the laity, and no form of home treatment is more abused or less understood than this one. In untrained or careless hands a douche is quite capable of doing mischief even if no disease existed. It is quite common for women who have the douche habit to take douches in a squatting position, sitting over a slop-jar. In such cases the fluid is rarely likely to remain long enough in the vagina to do any good, though it may harm, nor does it reach the upper vaginal regions where it is most needed. If a patient must give herself these treatments the best position is either on her back in a bath-tub or on a board fitted over the tub. If the hips can be elevated the fluid will have a better chance to do its work.

The *irrigator* should be suspended so as to give a flow of from 6 inches to 2 feet, and the tubing should be rather small or clamped in such a way as to prevent too rapid escape of the fluid.

It is probably true that the cleansing effects of the vaginal douche are greatly overestimated and the methods used are often careless in the extreme. A flow of water, medicated or otherwise, over other parts of the body does not ensure the cleanliness of the part. Some discharge is usually carried away, but investigation after routine treatments of this kind has shown that a considerable amount of discharge still remains.

Precautions and Dangers.—There is much need of caution regarding vaginal douches. Needless to say that surgical cleanliness should characterize the fluid, nozzle, and entire apparatus used in the treatment. Serious burns have resulted from using fluid that was too hot. A solution of bichlorid of mercury that was too strong has resulted in mercurial poisoning, and in other cases in severe injury to the vaginal walls. A solution of carbolic acid in which the acid crystals were not well dissolved has resulted in painful, serious burns, and several deaths have occurred from this cause.

If there is much mucus in the vagina a douche of bichlorid of mercury solution will fail of its full antiseptic effect. In such cases the mucus should be washed away with clear water first, or soap and water, before giving the antiseptic douche.

In inserting the nozzle it should be handled so as not to touch it with the fingers, and not allow it to come in contact with any unsterilized substance before introducing it into the vagina. The labia are separated with the one hand, while with the other the nozzle (after allowing a little of the fluid to escape) is directed downward and backward for about 4 inches. The douche should be stopped before the entire amount of fluid is exhausted, and the entrance of air into the cavity thus guarded against. There is a possibility of some of the fluid entering the uterus and causing uterine colic. Where there is prolapse of the uterus this has happened and caused much alarm both to the patient and nurse. The condition may be painful, and is sometimes dangerous, as, for instance, in cases of pyosalpinx or salpingitis. It should be avoided, and this can usually be done by proper care and seeing that the fluid does not flow with too much force. The injection of air into the uterus is a serious accident. In all douches there is always present the danger of infecting the patient.

Vesical douches are commonly employed to check inflammation and for various other affections of the bladder. The vesical douche can be given with an ordinary catheter, but a double-current catheter shaped like a Y is better. The fluid used is frequently boracic acid solution or a solution of permanganate of potassium. The bladder is emptied by a catheter, and the tube attached to the irrigator is connected with it and about 4 or 5 ounces of the fluid allowed to enter the bladder slowly. If the double catheter is used the fluid will readily escape. If the single catheter is used the tube must be detached to permit the escape of the fluid. The douche should continue till the fluid returns clear. In severe cases only a very small quantity of fluid can be retained, and the utmost care and gentleness are needed.

Intra-uterine douches are practically always given by physicians. The most rigid precautions against infection are needed. The nurse's duties in these treatments vary with circumstances.

Local treatments to the vagina and cervix may require the use of tampons saturated with various medicinal substances.

Tampons are pledgets of absorbent cotton, wool, or gauze (prepared by passing around them pieces of twine) for insertion into the vagina. These are used to convey some medicinal substance and keep it in contact with the cervix and vaginal walls or to make pressure. All tampons should be sterile. The drugs most frequently used for tamponing are glycerin, with or without boric acid, and ichthyol. The tampons should be removed at frequent intervals and always before attempting to give a vaginal douche.

An *applicator* is a thin, rod-shaped instrument frequently used in making medicinal applications to the cervix. It is prepared (after sterilization) by wrapping one end of it with absorbent cotton.

Instruments needed for vaginal examinations will also be required in local treatments.

Vaginal suppositories, commonly made with a base of cacao butter or glycerin, are used for the relief of pain, as an astringent, or as an antiseptic to promote healing of the cervix or vaginal walls.

Pessaries are instruments (usually made of hard rubber) used as supports for the uterus. Hard-rubber pessaries may lose their shape by being boiled, and are best prepared for use by cleansing and soaking in an antiseptic solution. Pessaries may cause irritation or pain, and such occurrences should be reported to the physician. It is sometimes a difficult matter to make a pessary fit and stay in place, and occasionally such discomfort is caused that the nurse will be asked to remove it. This, as a rule, is easily done by passing the index-finger (after thoroughly cleansing the hands) into the vagina over the pubic bone upward till the finger can reach and gently dislodge the pessary.

Plastic operations are operations undertaken to build up or repair tissues or restore a lost part.

Perineorrhaphy is an operation for restoration of the torn pelvic floor, restoring it so that it will again furnish proper support to the uterus and other pelvic organs (Fig. 86). If it is carried out just after the laceration takes place it is called immediate perineorrhaphy. In some cases the vaginal wall and the adjacent tissues are torn and stretched, allowing the bladder to sink too low, a condition known as "cystocele." When an operation is necessary to correct this condition the operation is known as anterior colporrhaphy. When the posterior wall is involved the rectum falls forward and produces the condition known as rectocele. The operation for the relief of this condition is called posterior colporrhaphy.

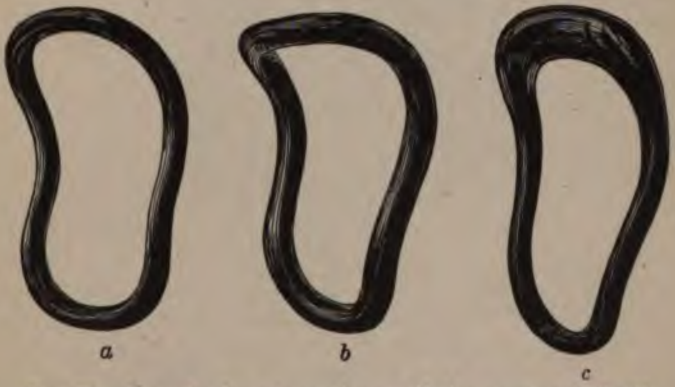

FIG. 85.—Pessaries for retroversion: *a*, Hodge pessary; *b*, Smith pessary; *c*, Thomas pessary (Penrose).

Trachelorrhaphy is an operation for repairing tears of the cervix that have failed to heal satisfactorily and that give rise to troublesome symptoms. In almost all labors the cervix is more or less torn. If the flaps fall together and infection is prevented, fairly good union may result. If the tear is very extensive the edges heal separately. Sometimes there are several tears. In these cases the scar-tissue must be removed and the denuded surfaces brought together and united by sutures.

The instruments needed for an operation for repair of the cervix and perineum include tenaculum or volsellum forceps, tissue forceps, scalpel, rather long-handled scissors with sharp points curved on the flat, hemostats, speculum, dressing forceps, short curved needles, needle holder, and suturing material.

In the nursing care of such patients very important points are the prevention of infection of the perineum and careful cleansing around the stitches. Frequently the knees are bandaged together for a few days following operation to prevent sudden strain on the perineum. A common cause of infection is displacement of the dressings. The vulva pad should be large, and a wide bandage which is divided at the free end of the cross-piece and secured with two pins on opposite sides of the pelvis will usually prevent this.

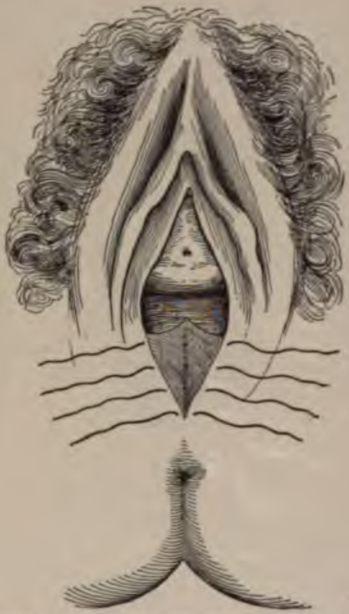

FIG. 86.—Recent slight median laceration of the perineum; sutures introduced (Penrose).

A **vaginal section** is an incision through the vagina wall into the abdominal cavity. It usually means the opening of the peritoneum. The most frequent site for the incision is back of the cervix. In some cases operators prefer to leave clamps on the bleeding vessels of the broad ligament instead of ligatures. The clamps ordinarily are removed in two days.

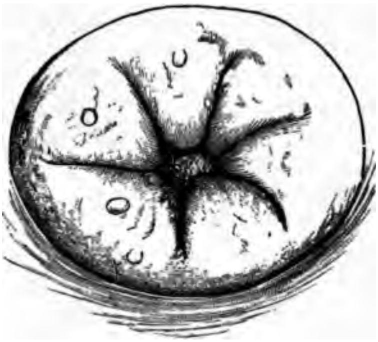

Fig. 87.—Multiple or stellate laceration of the cervix (Emmet).

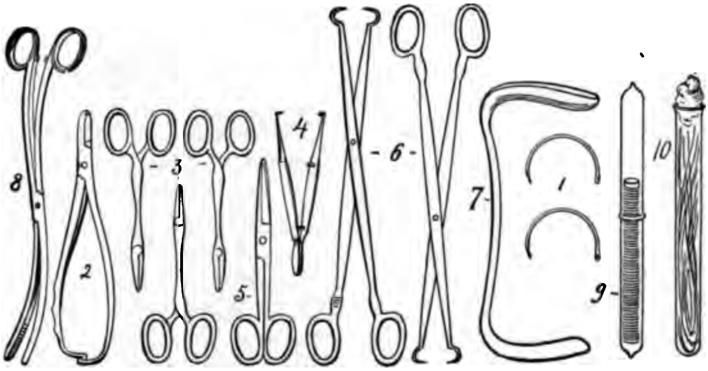

Fig. 88.—Instruments used in repair of laceration of cervix and perineum: 1, Curved needles; 2, needle holder; 3, hemostats; 4, tissue forceps; 5, scissors; 6, tenaculum forceps; 7, Sims's speculum; 8, dressing forceps; 9, catgut sutures; 10, silkworm-gut sutures (W. Reynolds Wilson).

All operations in which the peritoneal cavity is opened are serious. The chief dangers to be feared and guarded against are hemorrhage from giving way of a ligature or weakening of the walls of a vessel and septic infection.

An **abdominal section** is an incision through the abdominal wall into the peritoneal cavity. It is also called "celiotomy" and "laparotomy." Abdominal section means simply a laying open of the peritoneal cavity and exposure for direct examination and the necessary operative measures of diseased organs. It may be simply for exploratory purposes.

The principal gynecologic operations carried out through the abdominal incision are:

1. Breaking up of adhesions and releasing of organs bound down by them.
2. Removal of a Fallopian tube with its associated inflammatory mass (salpingectomy).
3. Removal of an ovary or ovarian tumor or cyst (oöphorectomy).
4. Removal of a fibroid tumor from the uterus (myomectomy).
5. Fastening of the uterus forward to the abdominal wall (ventrosuspension).
6. Removal of the uterus (abdominal hysterectomy).
7. Conservative work on the ovaries or tubes.

The term "conservative work" as here used refers to the removal of only a part of an ovary or tube, a part being preserved because it is not diseased or is diseased so slightly that there is a good chance of it continuing its function.

A *nurse's duties* at an operation for removal of an ovarian cyst will vary with the number of assistants present. She should know the instruments needed for such an operation, which ones will be needed first and in the different stages, and how to arrange the instruments so that no time will be lost in finding them. She should know the different steps in the operation, and what materials and assistance are likely to be needed every step of the way. In opening the abdomen the operator will require scalpel, tissue forceps, hemostats, scissors (straight and curved), and retractors. In addition to these there will be needed straight and curved clamps, cyst forceps and volsella, ligature carrier, sponge holder, trocar and canula, medium-sized round needles, needle holder, and suture and ligature materials. For the pedicle (the stem or attachment of the tumor) a stout catgut ligature will be needed, and fine silk, for the sewing of possible slight tears in the intestinal walls. These, with material for packing and the usual sponges, etc., will be the probable necessities.

The *alleviation of discomfort* following a major gynecologic operation is a large part of the nurse's responsibility at that time. It includes careful attention to securing rest, ventilation, warmth, position in bed with regard to the prevailing conditions, restraint till consciousness returns, measures for relief of postoperative vomiting (see pages 124, 394), thirst and dryness of mouth and lips, relief of pain as far as possible, and general measures used to promote comfort of all bed patients. Such conditions as shock, hemorrhage, distention of the abdomen, or distress from gas in the bowels due to loss of muscular tone and diminished peristalsis, require special attention.

Danger Signals.—Three important conditions which are to be watched for after an abdominal operation are shock, hemorrhage, and sepsis, all of which are elsewhere treated. The patient's pulse is the most important indication of the general condition. An increasing pulse-rate of poor quality is always ominous. Other dangerous indications are air-hunger, sweating, anuria. Any change is significant in such cases. For causes of postoperative rise of temperature see page 317.

The *nurse's records* after a major gynecologic operation should contain reports on temperature, pulse, and respiration, pain, vomiting, with character of vomited matter; rest or restlessness, urine, thirst, medication, food and drink, dressings, discharges, bowel movements, expulsion of gas, and general condition of the patient.

Convalescence may be considered to have begun "when the bowels have moved freely, the abdomen is soft, painless, and not distended, the temperature not above 100°F., the pulse not above 100, the kidneys act freely, the tongue is moist and clean, and the patient is hungry and sleeps without medicine."[1]

Diet.—The diet for the first two or three days after an abdominal section is, as a rule, very limited in quantity till after the bowels have moved freely. Milk with lime-water or vichy, buttermilk, chicken or beef broth, and albumin-water every four hours, with occasionally a little hot tea or lemonade or hot water, are the usual articles allowed. There can be no fixed rule for increasing the diet in such cases, as the condition of the patient must be considered in every case.

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[1] Davis in "Obstetric and Gynecologic Nursing."

Operations in the Home.—At some time every nurse will be called to assist in an operation in a home where the usual conveniences cannot be had. Curettage of the uterus is probably the most frequent operation done in the home, and even in a poor home aseptic precautions can be carried out. In practically all such cases the doctor brings his own dressings, and often his instruments sterilized and wrapped in a sterile towel. A kitchen table, or an extension table covered with a clean folded washable quilt, and over it a clean sheet, will answer for a table. (An extension table, separated with two of the boards laid lengthwise across the opening answers well for an operation for abdominal or other surgery in the home.) A sheet placed around the patient's neck and tied to each knee will serve for leg-holders. A piano stool can be used for the anesthetist. Any small stand or even a clean box on end can be used for an instrument table.

Cold sterile water can be prepared by sterilizing in the tea-kettle several hours before, and kept in a clean covered, scalded bucket or a bed-room water pitcher previously scalded. The tea-kettle will supply plenty of hot sterile water. The large dishpan or bread-pan can be used to sterilize the doctor's long handled instruments. These should be pinned in a clean towel or cloth for easy removal. A clean milk-pan or enameled basin will serve to boil gloves, fountain syringe, brushes, etc., or the wash boiler can be used for all the sterilization. A few clean towels or cloths can be steam sterilized in the kitchen steamer and used to cover the Kelly pad which the doctor brings, and the field of operation. The ordinary enameled wash basin or any clean basin can be sterilized with another inverted over it by boiling some water in it, and this measure secures two sterile basins and sterile water for hand cleansing. Alcohol (or in lieu of it, whisky) can be poured over the hands as a final precaution. The preparation of the patient will follow much the same lines as in a hospital. If a major surgical operation has to be done in the home, preparation should begin the day before. Steam sterilization of sheets, towels, gowns, etc., can be effected in a wash boiler by arranging a hammock by a towel fastened to the handles. The boiler should not be filled more than one-third full of water and an hour should be allowed from the time the water is hot enough to produce steam. The dressings should be wrapped in clean cloths and may be dried in the oven afterward. The nurse who has been properly trained in a hospital will not need to be reminded of the necessity of having the operating-room free from dust and of removing unnecessary draperies, etc.

Extravagance in demanding unnecessary towels, sheets, etc., for such work in private homes is one of the most frequent criticisms made of nurses. Sterilized dressings in packages can be secured in most large cities, but cost much more than if the dressing materials are sterilized by the nurse. Where expense is a consideration, this should be done.

CHAPTER XXI

THE FEEDING OF INFANTS AND CHILDREN

The stomach of the newborn infant resembles a flask in shape and lies nearly vertical. It is said to hold at birth about 1¼ ounces or less; it increases in capacity about 1 ounce for each month up till the seventh or eighth month. The position of the stomach explains the ease with which young babies vomit. There is no retching accompanying it. The vomiting is simply an overflow, just as any vessel will overflow when too much fluid is poured into it. The mouth of the young infant plays no part in the preparation of food for digestion nor in the digestive process. According to eminent pediatrists, the stomach serves mainly as a place for the coagulation of the milk which passes into the bowel little changed. The intestinal peristalsis is rapid. Experiments have shown that the small intestine is the chief seat of digestion in the infant, that the power to convert starch into digestible sugar is absent in the early months of infancy, and that undigested starch is a common cause of fermentive action and a fruitful medium for the multiplication of bacteria.

The saliva secreted by a young infant is deficient in ptyalin and small in quantity, and until about the seventh month the power to convert starch into sugar is in the pancreatic fluid. The saliva increases in quantity after the sixth or seventh month and resembles more nearly that of adult life. It is not fully developed till after dentition. For this reason starchy foods are wisely withheld till the digestive juices are provided to deal with them.

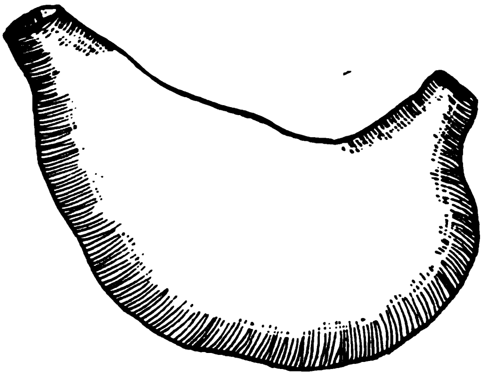

Fig. 89.—Stomach of infant at birth, natural size (J. P. C. Griffith).

Infant Feeding.—In the feeding of an infant no food should be allowed to take the place of the natural food when this is possible. Defective quality and quantity of maternal milk are sometimes indications for its discontinuance, but not always. A test of the weight of a child at frequent intervals, if all other conditions are favorable to health, will usually determine as to the suitability of the natural food. Bowel and stomach disturbances in the nursing infant point mainly to defective quality, and loss of weight, softness of adipose tissue, and flabbiness of muscle to defective quantity. But there are exceptions to all these rules. Some physicians believe that before abandoning the natural food a chemical and microscopic test of the milk should be made in a search for defects. "It is sometimes easy and sometimes difficult to correct defects in mother's milk. The various galactagogues that are advertised are, as a rule, worthless so far as improving quality or quantity is concerned. Milk or buttermilk in such quantities as the mother can digest produce better results than any other fluid. Regular exercise, proper food, and a placid, cheerful disposition will greatly help in keeping the milk in good condition. Anger, worry, excitement, and insufficient sleep have the opposite effect. Carefully selected tonics, laxatives, and even hypnotics are at times needed."

RULES FOR MODIFYING BREAST MILK[1]

To increase the total quantity....	Increase the liquids in the diet.
To decrease the total quantity....	Decrease the liquids in the diet.
To increase the total solids.......	Shorten nursing intervals; decrease exercise; decrease the liquids in diet.
To decrease the total solids......	Lengthen nursing intervals; increase exercise; increase the liquids in diet.
To increase the fat..............	Increase the meat in diet.
To decrease the fat..............	Decrease meat in diet.
To increase the proteids.........	Decrease the exercise.
To decrease the proteids.........	Increase the exercise to the limit of fatigue.

Difficulties in Maternal Feeding.—Failure of the baby to thrive upon the natural food is not sufficient cause for weaning at once. A physician who has had long experience in obstetric work gives the following list of reasons that he has heard commonly given for weaning a young infant, none of which he considers are in themselves a sufficient cause for depriving the infant of its rightful and proper food. These are: Cracked nipple; hyperesthesia of the nipple; ulcer of the nipple; caked breast; mother unwilling to nurse her child; irregular habits on the part of the mother; mother ill-tempered; mother given to fits of depression. He then gives a list of reasons which may be real contra-indications, and of which the physician must be the judge: Abscess of the breast; insufficient supply of milk; child losing weight; indigestion in the child; irregular habits on the part of the mother; frequent emesis; syphilis in the mother (child apparently free); chronic diseases of the skin; menstruation; pregnancy. Menstruation, as a rule, does not interfere to any great extent either with mother or child. The milk sometimes disagrees temporarily, and it may be wise to feed artificially during the menstrual week and pump the breasts. If there is a serious disturbance at those times the nursing should stop. The pregnant woman can often nurse for the first few months without injury to herself or child, but if the child is old enough to make it safe it should be weaned at once. There is said to be a danger of miscarriage if nursing goes on during pregnancy.

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[1] Griffith's "Care of the Baby."

Real or *absolute contra-indications* to nursing are: Absence of the breasts; insurmountable defective development of the breasts; mastitis of both breasts, with pus in the milk of both; carcinoma of the breast; entire and insurmountable cessation of the secretion of the milk, no appreciable cause being present; total absence of the nipples (rare); defective development of the nipples, sunken and inverted (common); impervious milk ducts (rare); severe cases of puerperal fever; prolonged cases of metrorrhagia or menorrhagia; serious attacks of acute disease, as pneumonia or typhoid; advanced cases of chronic disease; tuberculosis; syphilis (unless the child is syphilitic, when one should use best judgment); mental disease; hysteria gravis; epilepsy (with many seizures); chronic arthritis; child steadily losing weight, notwithstanding all efforts; milk persistently and greatly abnormal and not agreeing.

Artificial Feeding.—When natural feeding is impossible resort must be had to artificial methods. The best substitute for mother's milk is the one that closely resembles mother's milk in nutritive value, in digestive adaptability, and physical characteristics. Ass's milk is chosen as the next best thing. The chief points of difference between maternal milk and cow's milk are: The mother's milk contains more sugar, more fat, less proteids. Cow's milk not only contains larger proportions of proteid, but the proteids are capable of forming tougher curds in the stomach and are considered more difficult of digestion. In the mother's milk bacteria are not present; in dairy milk these are present. The first point of importance in preparing artificial food is to secure milk from a healthy animal, and to be sure that the milk has been carefully handled. The exact modification is less vital, for, as is well known, the mother's milk is subject to decided changes in proportion of ingredients, and a great difference is observed in the milk of different women.

It is no part of a nurse's duty to prescribe an artificial food for a baby nor to question the wisdom of any food which the physician may prescribe. Nurses who have seen babies do well on some special kind of food have made the mistake of suggesting it in other cases. No one food will suit all babies, and foods which appear excellent in theory may fail in practice. Even the cheap and much-condemned condensed milk has its value as a temporary food. Infants have thrived on it while others have died in spite of the most scientific and carefully managed régime. Babies will sometimes thrive in spite of unwise feeding and care, not because of it. There are some children with whom cow's milk, however carefully handled, will act as poison, and some other diet must be given.

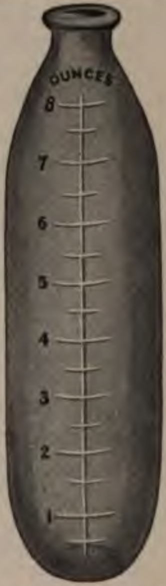

FIG. 90.—A hygienic nursing-bottle (De Lee).

Cleanliness and exactness in the preparation and management of the foods are of prime importance. If the physician gives a formula for the food inquiry should be made whether the cream is to be "separated" cream or cream skimmed off a basin; whether "milk" means unskimmed or skimmed milk. If "top milk" is ordered, find out how many "top ounces" are to be taken off a bottle; whether the mixture is to be sterilized or pasteurized. The length of time the milk is allowed to stand before taking off top milk is also an important consideration.

Bottles and attachments, measuring glasses, etc., need rigidly careful cleansing. They should be boiled after using and kept in a weak solution of bicarbonate of soda. Nipples should be thoroughly cleansed after use, boiled every day, and kept in a boracic acid solution. Nipples do not last long and cause frequent trouble by collapsing if boiled too often.

During feeding the baby should not be left alone with its bottle, at least not in the first six months. Nurses often make the mistake of doing this, but the practice is condemned by pediatrists in general. If left alone the baby is likely to drink too rapidly or too slowl food cools; to lose the nipple and get it dirty; little, all of which can be largely prevented if the bottle, or the baby and the bottle, and enc ks as occasion requires. If the nurse will only k e fact that at birth the infant's stomach only h nce without distention, that at two months its ly about 2 ounces, she will realize the indiscretion of giving a newborn baby a nursing bottle and allowing it to swallow all it can.

Griffith gives the following formula for a milk modification, which may be useful in emergency, and the accompanying suggestive table for feeding:

Milk	1 oz.
Cream, centrifugal (20 per cent. fat)	1½ oz.
or	
Cream, skimmed (16 per cent. fat)	2 oz.
Soda solution	½ oz.
Milk-sugar	3⅜ dr.
Water, enough to make	8 oz.

GENERAL RULES FOR FEEDING

Age.	Intervals of Feeding	Number of Feedings in Twenty-four Hours	Average Amount at Each Feeding.	Average Amount in Twenty-four Hours
First week	2 hrs.	10	1 oz.	10 oz.
1–6 weeks	2½ hrs.	8	1½–2 oz.	12–16 oz.
6–12 weeks and possibly to fifth or sixth month	3 hrs.	6 or 7	3–4 oz.	18–24 oz.
6 months	3 hrs.	6	6 oz.	36 oz.
10 months	3½–4 hrs.	5	8 oz.	40 oz.

The soda solution is made by adding 2 grains of soda bicarbonate to 1 ounce of water or 1 dram to a quart. One tablespoonful of this solution is equal in alkalinity to a tablespoonful of lime-water, and Griffith recommends it in preference to lime-water. He states that, "The disadvantage of using lime-water in preparing milk mixture becomes evident in sterilizing. Not only does the lime combine in some way with the sugar producing a brownish color, but is largely precipitated by boiling, and the lime-water is thus destroyed."[1]

The milk modification known as "Meigs' mixture" has been widely used, and is one with which nurses should be familiar. It is said to meet the necessary requirements of mother's milk in specific gravity, richness in fat, sweetness, and alkalinity, and has been approved by pediatrists in general, but no one food will meet the needs of all babies:

MEIGS' MIXTURE

Cream (skimmed)	2 parts.
Milk	1 part.
Lime-water	3 parts.
Sugar-water	3 parts.

The sugar-water is made by dissolving 16 drams of milk-sugar in 1 pint of water. It must be made freshly every day or two.

Predigested milk preparations are often required in the artificial feeding of infants. The predigestion is usually accomplished by means of pepsin furnished in a convenient form in "peptonizing tubes" or in tablets known as peptonizing tablets. The directions for use accompany these preparations, but the nurse should understand some important points about the process of predigestion of food.

1. First warmth (a temperature of from 100° to 115°F.) is necessary for the digestive preparation to act on the food.
2. Cold checks the process of digestion.
3. Heat destroys the digestant.
4. If the peptonizing process is carried too far the milk or food will become bitter. The bitterness does not interfere with the nutritive value of the food, but makes it unpalatable.

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[1] Griffith's "Care of the Baby."

If at the first suspicion of a bitter taste in the food the mixture is quickly brought to the boiling point, which will at once destroy the digestant used, further change in taste will be checked.

Bacteria in milk are among the chief causes of mortality in children and the chief reason why milk fails to agree. It is
much better to try to s and keep it pure than to
try to make a foul or i or use by sterilization or
pasteurization. No pr d will change putrefying
milk into a wholesome

"Certified milk," or by dairymen under con-
ditions approved by m can now be secured in
most large cities. In ed milk conditions are
about as follows, and can in most points be
observed by individual families who own a herd of cows where artificial feeding of an infant becomes necessary:

1. Milk should come from a herd rather than from a single cow when possible.
2. The cows must be free from disease.
3. Food and water of the cattle producing milk for infant feeding are highly important. Distillery slops for food and foul water for drink cannot produce a food fit for an infant.
4. Cows should be curried and otherwise cleaned from time to time and the udder washed before milking.
5. Milkers should be clean in clothing and person, especially the hands.
6. Buckets for receiving the milk should be covered with sterilized gauze, through which the milk flows, and the milk should not be allowed to stand in the stable, but carried to the separator after each cow is milked.
7. The stables should be clean and well drained.
8. The measures, buckets, strainers, bottles, etc., should be subjected to the action of live steam, or boiled before use.

Modifications of these general rules can be made in private homes. In cities, where the difficulty of procuring reliable milk is often great, goats have been purchased by private individuals and utilized for milk production, and the method has much to commend it.

The **feeding of children,** sick or well, is the most important of all the nurse's duties toward them. If she fails there great is the failure. One thing which is exceedingly important to remember is, that the stomach of an infant is an exceedingly delicate piece of machinery that will not endure much experimenting. This is a fact which cannot be too strongly impressed on mothers. When the baby does not thrive to their satisfaction they are advised by well-meaning neighbors to try this, that, and the other thing. The result of these promiscuous experiments is in many cases a funeral. Every change in a baby's diet should be made gradually. As the child grows, more milk and less water is put in its food, and before weaning the baby should be gradually accustomed to other foods. Another point worth remembering is, that the size of a baby is a better guide as to amount in feeding than the age. A large, plump, robust baby can digest more food and needs more than a small, puny baby of the same age.

Patent foods are subjects on which the nurse's advice will often be asked. As before stated, nurses should be exceedingly cautious about any advice they give regarding foods. Some of these patent foods added to cow's milk are undoubtedly valuable, but most pediatrists prefer, when used at all, to use them as additions to cow's milk, not substitutes for it. There are various objections urged against these foods, among which the chief are:

The presence of starch.

The absence or deficiency of fat.

The risk of scurvy if long continued, because of the absence of certain elements contained in fresh foods.

Beef juice or raw-meat juice of any kind and orange juice are useful in preventing scurvy, and are desirable adjuncts to the diet of many babies.

Reasons against starchy food being fed to young infants should be known by every nurse. The anatomic and physiologic conditions of the young infant require that the food be fluid, that it be readily digested, that it be of a quality to be rapidly absorbed, and that it contain no starch.

On *general principles,* no solid food is needed or should be given till the child has teeth. A fundamental principle that should govern in feeding is that no food should be given a child which it is not able to digest or which will not nourish it. The question is not whether this article of diet will do a baby any harm, but will it do the baby good. So long as a child thrives, gains in weight, is ordinarily contented, does not vomit, his food in quality and quantity cannot be far from proper. The necessity of giving water at regular intervals to all babies should be emphasized o [illegible] e fact that "about one-fifth of all the deaths [illegible] until two years of age are caused by digestive [illegible] l be sufficient to impress on nurses the importan [illegible] h of study.

Difficulty is sometime [illegible] n getting an older child to take food. These [illegible] ld be reported to the physician and an accu [illegible] cept of what is given. Force may be needed, b [illegible] rse holding a coughing, sputtering child down to the bed with the end of a feeder forced between its teeth is to know at once that she is ignorant of the first principles of her profession."[1] If force is necessary the child can be wrapped in a sheet with its arms confined; while on its back one nurse can separate the teeth while another nurse slowly administers fluid food, spoonful by spoonful, always waiting for one spoonful to be swallowed before giving the next. A clothespin between the teeth will prevent the food being spitted out, or the insertion of the index-finger of each hand into the corner of the mouth; the cheek is held separate from the teeth, and the fluid, poured into the space, gradually finds its way to the back of the throat and is swallowed.

CHAPTER XXII

DISEASES OF CHILDREN

Before a nurse is fitted to intelligently care for a sick infant she must have made careful observation of the normal condition of infants and children, and to a certain extent understand the language of babies. A great many mothers (and nurses also) have a fixed idea that hunger is the chief reason for a child's crying. Every cry of a child has some significance. A baby may be overfed and suffering from the consequences, he may be cold, sleepy, thirsty, uncomfortable from wrinkled or wet clothing, may be tired of being in one position, or may cry from habit. All these cries differ.

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[1] Cuff.

The **cry** of real hunger is more or less emphatic, continuous till satisfied, and accompanied by sucking of the fingers or attempts to sit up.

A cry of discomfort from clothing or position is a more or less fretful whine.

The cry of temper is rarely heard in the first six months. This cry is more apt to be a shriek or violent outburst, accompanied by attempts to hold the breath, stiffen up, and kick.

The cry which ceases as soon as a baby is taken up and begins when he is laid down is one which, as a rule, need not cause any alarm and may properly at times be disregarded.

The cry of colic, or one caused by griping pains, is sharp, almost vehement, or passionate. The legs are drawn up. The child writhes, stops its cries for a moment and resumes. There may be vomiting or discharges of gas; sometimes tears are shed.

The cry of weakness or exhaustion is a weak, pitiful whine.

The cry due to pain in the chest is a short, stifled cry, ceasing for a few minutes and resumed. In cases of severe inflammation of the bronchial tubes or lungs the child cries little, often not at all, having no breath to spare for the effort.

The cry of teething is a peevish cry, with more or less violent outbursts at intervals.

The cry of marasmus resembles the cry of weakness or exhaustion.

The cry of laryngitis is hoarse; that of meningitis sharp, sudden screams. The cry due to earache or other sharp pain is a series of screams. The hand is put to the ear or location of the pain, and the cry grows worse if the affected part is disturbed.

The **nurse's observations** should include the general demeanor, whether natural, drowsy, apathetic or excited; position; signs of tenderness or stiffness; facial expressions and color; frowning or twitching of the muscles of the face; contraction or dilation of pupils; swelling of gums and general condition of the mouth; difficulty or disinclination to swallow; heat of hands and feet; the discharges of the body; cough and general respiratory symptoms, as well as the temperature and pulse.

The **temperature of children** is subject to very great variation from slight causes. Most alarming temperatures often occur from an attack of simple indigestion. For example, the presence of a very hard, indigestible curd of milk in the stomach of a five-year-old child has been sufficient to cause a temperature of 104°F., which promptly subsided when the curd was vomited.

The nervous system of children is unstable, and children are much more liable to delirium than adults. In a child of an excitable, nervous temperament delirium when the temperature is very little above normal is not uncommon. A profound stupor, lasting for several days, has resulted from digestive disorder, which promptly subsided when the overloaded intestinal tract was cleared.

Examinations and **treatment** of children are attended with much more difficulty than in adults. Because of the undeveloped reasoning powers of the child, it almost instinctively resists anything that disturbs or alarms. The child's peculiarities need to be closely observed, and firmness without harshness, with absolute truthfulness, practised by the nurse.

Restraint is very frequently necessary. Swathing a child's body, arms, and legs may be needed in some cases. Use a small strong sheet folded or a large bath towel; wrap it around and around closely and confine on the shoulder with a firm safety-pin.

For an *ear examination* wrap a moist towel (to prevent slipping) around the child's head. Let the nurse take the child in her lap, with the ear to be examined turned toward the surgeon. One of the nurse's legs is thrown over the child's legs and over her own other leg. One hand holds the head against the chest, the other holds the child's wrists, the surgeon being seated opposite, with the necessary instruments on his right.

For a *throat examination* the nurse, seated, takes the child on her lap, confines the legs between her own as described in the previous paragraph, the child's back resting against the nurse's chest. Passing her arms under the child's she brings them up and holds the child's head against her by pressing on the forehead.

For an *eye examination* the nurse may sit opposite the surgeon with the child's head between the surgeon's knees and the body in her lap; the feet may pass under one arm, which presses them firmly, the other hand being free to use as may be needed.

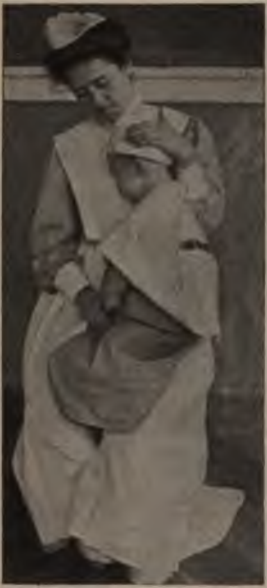

FIG. 91.—Method of restraining child for an ear examination or dressing (Manhattan Eye, Ear, and Throat Hospital nursing book).

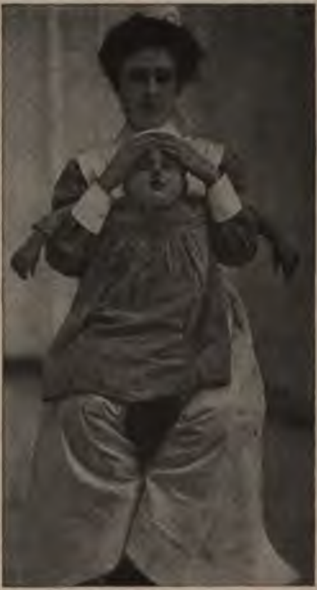

FIG. 92.—Method of restraining child for a throat examination (Manhattan Eye, Ear, and Throat Hospital nursing book).

Other methods of examination do not differ materially from those used in adults.

Jaundice (*icterus neonatorum*) is a yellow discoloration of the skin of the newborn. It may be either physiologic or pathologic. The physiologic type is common in prematurely born babies. The color of the conjunctiva is not altered, nor is any special change noted in urine and feces. This type requires only warmth and good care and it usually will right itself. Catarrhal jaundice is due to a catarrhal condition of the ducts. It may last a week or two. The eyes and urine are discolored and the feces assumes a clay color. Some medication is generally required in these cases, and the diet of the mother needs to be carefully watched.

Constipation is one of the very common disorders that require special attention on the part of nurses. The cause and consequent method of treatment will differ in breast-fed infants, artificially fed infants, and in older children.

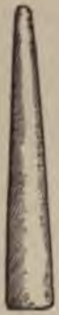

FIG. 93.—Soap stick (Griffith).

In breast-fed infants the cause of constipation may be due to some defect in the mother's milk arising from a faulty diet or a departure from health, unhygienic surroundings, constipation in the mother, mental anxiety or worry. These and many other conditions will react unfavorably on the baby. Human milk is subject to considerable variation.

In bottle-fed babies, in which constipation is more frequently present, the causes are often beyond the reach of ordinary remedies. The conditions may be due to deficiency of fat or indigestibility of the food. Overfeeding is a common cause, also the giving of starchy foods too early. Other causes may be rickets, general depression from any cause, want of fresh air, anemia, acute diarrhea, the habitual use of enemata, unwise remedies for colic, or other disorders.

In *older children* any of the causes that apply to bottle-fed babies may properly be searched for, but in these cases habit and exercise have some influence. Want of water or fluids in the body is a common cause. A catarrhal condition of the intestines and the presence of thread-worms are often associated with constipation.

In occasional constipation in infants the soap-stick or suppository is often all the treatment that is needed. The soap-stick may be made of castile soap about 2 inches long, thicker at the base, and tapering to a point. This, smeared with vaselin, slowly introduced for about an inch into the rectum and held there for a time, will usually stimulate the bowel to empty itself. The stick may be washed and used repeatedly.

For *constipation in babies* Griffith suggests as possible remedies an increase of fat in the food or more cream to the bottle or fed from a spoon.

A teaspoonful of olive oil daily.

A teaspoonful of "drug store syrup" two or three times daily.

Oatmeal-water instead of plain water in preparing the food.

Orange juice.

A baked apple or stewed fruit may be tried in children over one year of age.

Strained prune juice.

Cultivation of regular habits of evacuating the bowel.

Increase of fluids and laxative foods.

Massage.

Occasionally enemata.

Lastly, laxative drugs, of which cascara or syrup of senna are two of the best.

Plenty of fresh air and outside exercises are important factors in recovery. It is well for nurses to remember that the tendency of lime-water in food is toward constipation.

Thrush (*stomatitis*) is a specific yellowish-white parasitic growth upon the mucous membrane of the mouth which has been previously irritated by acid secretions. It is common among young infants. It commonly occurs as the result of sour food or unclean nipples or bottles, and may be transferred to others. It may also be communicated to any raw surface which is not kept scrupulously clean. This often occurs about the anus. Intestinal catarrh very frequently accompanies it. When the diarrhea is persistent it usually runs a fatal course. If this complication is not present, if the child is otherwise strong and well, it may be gotten over in a week. Cleanliness and care in diet will usually prevent it. The treatment consists in changing the acid reactions of the buccal secretions to alkali by the use of a solution of borax or bicarbonate of soda. Substances which favor the growth of fungi, such as sweet fluids and milk, should be avoided. Unsweetened bouillon or oatmeal gruel, with eggs, are often recommended until the fungus has disappeared.

Diarrheal diseases in infants and children are among the most serious and most common forms of illness, especially in the homes of the poorer classes.

Chronic diarrhea in older children is best treated by careful management of the diet. Thompson suggests four light meals in a day in preference to three heavier meals, the elimination from the dietary of acid foods, pickles, fruit, or indigestible substances, fluid foods which occasionally may require to be predigested. When improvement begins he suggests the judicious use of such foods as raw oysters, fresh fish, minced beef and chicken, soft-cooked eggs, soda crackers, toast bread, milk custards, and wine jelly. Inunctions of warm olive oil, cod-liver oil, externally or internally, and massage are other measures recommended.

Cholera infantum (acute gastro-intestinal catarrh) is believed by many to be due to production of a poisonous ptomain as the result of decomposition of milk. The course is rapid and frequently fatal inside of thirty-six hours. Deaths have taken place within six hours after the onset. Rectal injections of chloral hydrates, collodion over the abdomen, with astringent mixtures internally, hot packs, etc., are used in treatment. Quinin and morphin hypodermically are sometimes given as a last resort. Pink powder is a remedy much used in this affection.

Summer diarrhea is one of the exceedingly fatal diseases among infants. It is especially prevalent in densely populated communities. Occasionally the disease persists for several weeks, and complications are numerous. As a rule, it is rapidly fatal unless checked. The immediate cause is due to poison developed in the food by the action of bacteria as a result of high temperature, and the disease is readily communicated by means of soiled hands or utensils.

Preventive treatment consists in keeping the babies clean and as cool as possible in hot weather, and in most careful attention to the cleanliness of food and utensils. Hygienic management is the first step in the prevention. In giving instruction to mothers in the poorer districts with a view to preventing intestinal diseases in summer, a card containing the following general directions with other instruction as to where to apply for treatment in various places, has been used in the educational work for the reduction of infant mortality in cities:

"Remember there is nothing so good for the baby as the mother's milk.

"Don't feed it anything else unless told to do so by your doctor.

"If your doctor says you must stop the breast-milk get the properly prepared food from the milk station. (Nipples sterilized and wrapped in waxed paper, are furnished with each day's feeding.)

"Keep the milk you get from the station in a cool place. Do not boil it.

"Use a fresh bottle and clean nipple for every feeding.

"Don't feed the baby cold milk. Put the bottle in a can of warm water for about ten minutes before each feeding.

"Don't feed the baby too much or too often. Remember there is more danger in feeding too much than too little.

"Feed at regular hours and from the bottle only; if the baby cries at other times give it cool, boiled water.

"Don't give it any milk in case of diarrhea. Consult the doctor about food.

"Don't handle the baby too much. Let it alone. Don't pick it up every time it cries.

"Don't put too much clothing on it; bathe it in a tub every day.

"Don't allow the baby to stay in a close room. Give it fresh air, asleep or awake, night or day.

"Don't let it stay awake too long. Give it at least two naps a day.

"Don't let the baby sleep in the bed with any other person in summer. Arrange a bed on chairs if you have no crib."

Most of these rules may wisely be observed in dealing with babies in general.

General Management.—When the disease manifests itself, the first essential is to clear the offending contents of the stomach and intestines out as rapidly as possible. Diarrhea and vomiting are efforts in this direction, but prompt assistance is needed. Castor oil is commonly given to hasten the clearing of the gastro-intestinal tract.

Irrigation of the stomach, using a large-sized catheter attached to a funnel and lukewarm water, the irrigation to be continued until the fluid comes away clear, is warmly commended by some eminent medical authorities. Salt is sometimes added to the water.

Irrigation of the intestines is one of the most effective of all treatments. The child should be placed on the back, keeping it turned slightly toward the left, hips elevated, and a large soft-rubber catheter used. In a baby of six months a pint of salt solution will usually be sufficient, and a quart for a child of two years. The tube should be well oiled and passed up from 6 to 8 inches. If there is high fever, ice-water is sometimes used for irrigation, but normal salt solution, lukewarm, is the most common fluid. The stools should be closely watched and changes in character reported.

Borax solutions, using a dram of borax to a pint of water, or dilute nitrate of silver solution are occasionally resorted to.

Some prominent pediatrists are opposed to the use of the catheter or long tube in colon irrigation for the following reasons:

It is difficult to pass the long tube past the sigmoid flexure in children.

The process is always uncomfortable, and the more so if the rectum or colon have any degree of inflammation. There is always the possibility of traumatism.

It is claimed that when the long tube is used in infants it never reaches beyond the sigmoid, but folds over, and remains in the lower bowel, and that better results come from the use of the short rectal nozzle.

Diet.—Milk is very generally withheld for a few days. Albumin-water, with or without the addition of a little brandy; barley-water, arrowroot gruel, milk whey, or koumiss, and beef juices and broths are all recommended. Osler says that in these cases "there is no form of nourishment so readily assimilated and apt to cause so little disturbance as egg albumin or the simple beef juices." When a return to milk diet is made the milk should be sterilized.

Frequent baths, either tub or sponge, help to keep the child cool, which is an important aid in tiding over the disease. A change to the cooler air of the seashore or even to the parks in the day time is often helpful.

Starch and laudanum injections are useful aids in this disease.

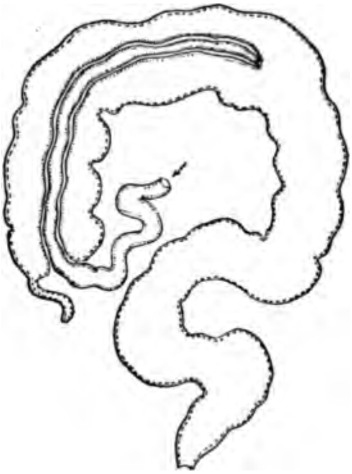

Fig. 94.—Intussusception (Frühwald and Westcott).

Water given freely, even when immediately vomited, is recommended by some medical writers.

Intussusception is one of the most frequent forms of intestinal obstruction in children. It consists in the slipping of one portion of the bowel into an adjacent portion, as a finger of a glove may slip down into itself. As a rule, it occurs in the small intestine near the ileocecal valve. It is more frequent in boys than girls, and sometimes follows a protracted diarrhea. The blood-supply is cut off from a portion of the intestine, and gangrene and death occur unless prompt measures are taken to remedy it. The onset is usually sudden;

vomiting is persistent. At first the vomited matter is of bilious character and becomes darker as the obstruction is complete. The abdomen at first is flat and later distended.

The main treatment at first is usually large, high rectal injections, with a view to forcing the bowel back and relieving the obstruction. In giving these injections the hips should be well elevated or the kn[illegible]on used and the irrigator suspended so as to giv[illegible]east 4 feet. If these injections do not remed[illegible] immediate operation is usually resorted to.

Among the diseases [illegible]rn babies are particularly susceptible is ophthalm[illegible].

Ophthalmia neonat[illegible]ctive conjunctivitis of the newborn, is cause[illegible]rhea germ. The disease in many cases is contr[illegible] the passage through the vagina, but the infection may be caused by carelessness on the part of nurse, physician, or mother. Any septic germ or irritating substance allowed to get into the eyes may cause ophthalmia, but the gonorrheal infection is most to be feared.

The *early symptoms* are redness and swelling of the conjunctiva and a thin, yellowish discharge which accumulates in the corners of the eyes. If the disease is not arrested in the first twelve hours or so the inflammation spreads very rapidly. The pus accumulates at an alarming rate; the eyelids are swollen till they are closed. If the progress is not arrested the cornea becomes ulcerated, the eyeball shrinks, and vision is destroyed. In cases where the disease does not completely destroy the eye the vision may be clouded by the formation of scar-tissue. It is said that one-third of all cases of blindness are due to this disease, and in many cases the blindness results in a very few days. No disease requires such unremitting care or is a greater test of a nurse's skill and faithfulness. To fall asleep at one's post while in charge of a case of this kind is one of the unpardonable failures in nursing. To succeed is to achieve one of the greatest successes in nursing.

Preventive treatment consists in the careful cleansing of the eyes of the newborn. The Credé method of prevention consists in the application to the eyes of a nitrate of silver solution (usually a solution of 2 per cent., or about 10 grains to the ounce) or a 5 per cent. solution of argyrol. The nitrate of silver solution is afterward neutralized by a normal salt solution.

General Management.—Most physicians agree that to keep the eyes free from the discharge as far as possible is the most essential part of the treatment. This requires very frequent and very thorough cleansing of the eye, meanwhile carefully protecting the uninfected eye. Ice-compresses are a great help in checking the inflammation. Irrigations of boric acid or a very weak corrosive sublimate solution are commonly used, the irrigator being suspended 3 or 4 feet above the child. The fluid is allowed to enter at the inner corner of the eye, the lids are separated so that the fluid may reach to every part, and the irrigation is continued till the secretion is entirely washed away. The interval between irrigations will be determined by the physician. In a serious case of this kind a nurse should give her exclusive care to the patient, and as no nurse can continue at her post indefinitely a relief nurse is necessary. The case is usually decided in a very few days.

The *ice-compresses* are prepared by cutting pieces of gauze (of about four thicknesses) or of lint. These are prepared in considerable quantities, about the size of a half-dollar. A basin with a large piece of ice is provided. De Lee recommends pouring a saturated solution of boric acid over the ice. The compresses are soaked in the solution, laid on the ice for chilling, and applied at very short intervals. The compresses should never be used more than once, and the soiled ones should be carefully disposed of in a paper sack, which can be burned.

There is always present the danger of nurses infecting their own eyes by rubbing them with infected hands or of carrying the infection to others. All such cases should be isolated, and too great care cannot be exercised in the prevention of this form of infection.

Atelectasis has been defined as the absence of air from a portion of the lung, due to collapse of the air veiscles or imperfect expansion of the lungs at birth. One of the most frequent causes of this condition in newborn infants is asphyxia. Prematurely born or very feeble babies are more prone to it and deaths are common from this cause. In babies who have been born asphyxiated there is a danger of the mucus being sucked into the lung. All such babies should be most carefully watched for several hours till normal respiration is established. Babies who have a weak, whimpering cry, are inclined to be cyanotic, nurse with difficulty, and breathe superficially and rapidly are [illegible] likely to die of collapse.

The *management* con[illegible] the promotion of bodily warmth and encourag[illegible]ation. McCombs says, "the best way to over[illegible]ency is to have the baby cry with vigor once or [illegible]d not allow it to remain perpetually in its crib. [illegible]nount of handling daily is necessary and ove[illegible]ndency toward shallow respiration."

Points to Remember.—It is exceedingly important to study the individual patient. Every child has a language of its own and its own little ways, which must be considered if the nursing is to be a success.

Firmness in dealing with sick children is often the truest kindness, but it can be carried too far. As a rule, it is wise to make concessions in matters which are not very important.

The parents of a very sick child are often themselves ill from anxiety and often require as much consideration as the child when irritability is manifested.

Dysentery and cholera infantum are communicable diseases. A reinfection may occur from a little carelessness.

In whooping-cough wash the patient's hands and face frequently and put on fresh clothing twice a day. The long cases are usually due to a reinfection.

Regular habits are practically always established during the first few weeks of life if at all.

Crying should never be disregarded. It means some sort of discomfort.

Warm water, internally and externally, is the best remedy for colic.

Nervous children, as a rule, are not born, but made.

CHAPTER XXIII

DISEASES OF CHILDREN (Continued)

The teeth and their care in recent years are commanding increased attention because of their influence on the general health of the individual.

Dentition.—There are twenty milk teeth (these are also called temporary or deciduous teeth), two central incisors, two lateral incisors, two canines, two anterior molars, and two posterior molars in each jaw. The order in which these appear varies, but as a rule the lower central incisors come first, usually about the sixth or seventh month. Many babies have their first teeth earlier than this, and others later. If a baby has no teeth at the end of his first year it is a convincing

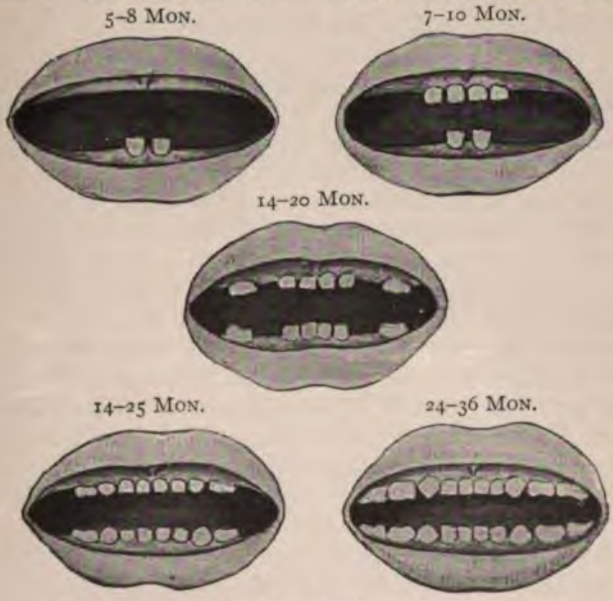

Fig. 95.—Normal dentition (Frühwald and Westcott).

proof that his general condition is below normal, even if he appears well nourished.

The process of teething is purely natural, and a child in ordinary good health will have very little discomfort. It is a common mistake to attribute all sorts of symptoms to teething disturbances, and babies have been allowed to suffer and die because the mother [illegible] eved the fretfulness and other signs of illness we[illegible] eething. In excessively nervous or poorly nour[illegible] the coming of the teeth may exaggerate other [illegible] t it is well to examine closely for other cause[illegible] before settling down to the idea that teething i[illegible].

DISEA[illegible] TEETH

Normal alignment of the teeth is important. *Irregular teeth* pave the way for many ills and are much more susceptible to diseases which result in early loss of teeth. It has been stated by dental authorities that the child with irregular teeth almost always has enlarged tonsils and adenoids.

The child with irregular teeth will frequently be found to be masticating on but one side of the mouth. When, for mastication, only one side of the mouth is used, much less saliva is secreted than when both sides of the mouth are used. The food enters the stomach in a condition which renders digestion more difficult and extra burdens are thrown on the stomach. This burden may be carried for years, but usually when nearing middle life the vitality of the stomach is impaired and treatment for digestive diseases is needed.

Early decay of temporary teeth should be prevented as far as possible and the loss or removal of such teeth prematurely should be considered a serious misfortune. The size and shape of the arch or jaw depend upon the number of teeth retained permanently. The removal of a tooth means that the adjacent tooth in the opposite arch is rendered useless or almost so in mastication.

The normal development of the dental organs provided by nature are essential to a normal development of a well-formed face. Supernumerary teeth occasionally appear and should be removed to prevent crowding and irregularity of the other teeth.

Irregular teeth or premature loss of teeth means that the child's masticating surface is greatly reduced. The imagination can picture the condition of a lawn after being mowed with a lawn mower with broken blades, and this condition is similar to the mouth conditions where premature loss of teeth occurs.

Dental caries is frequently the result of irregular teeth which permits food to be lodged until the process of decay produces a cavity.

Cavities in teeth retain foods in solution that have undergone fermentation. All the conditions needed for the development of disease-producing bacteria are present—warmth, moisture and material on which to feed—so that an individual who is exposed to contagious disease offers, through an uncared for mouth, everything needed for development.

The alveolus, the bony socket of the tooth, is the seat of various disorders which, if neglected, may lead to serious results.

"*Alveolar focal infection* may be the dominant factor in the production of systemic disease of which malignant endocarditis and chronic arthritis, are examples. From the infected alveoli and tooth canals we have made bacterial cultures. The dominant organisms belong to the streptococcus-pneumococcus group. . . . In five patients suffering from Hodgkin's disease an alveolar abscess has culturally yielded the diphtheroid bacillus which is found in the enlarged lymph glands in that disease."[1]

Alveolar abscesses, commonly spoken of as gum boils, may lead to serious complications, though ordinarily these are easily overcome. "The microörganisms in alveolar abscesses may be carried to any part of the body by the blood-stream or lymph. Pyemia and septicemia are often traced to abscessed teeth." (F. H. Herald, D. D. S.)

Pyorrhea alveolaris (Rigg's disease) is a purulent inflammation of the dental periosteum with progressive necrosis of the alveoli and looseness of teeth. "Pyorrhea, or tonsillitis, may be the source of an infection which we call rheumatism. Root abscesses and pus pockets connecting them are often the source of acute and chronic rheumatism."[1]

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[1] **Frank Billings, M. D.**

The proper care of the teeth from the time they appear, watchful care that temporary teeth are not lost before their time and preventive measures tending to preserve in good condition the permanent teeth, are among the important health measures now emphasized by those who are interested in preventive medicine.

DISEASES OF NUTRITION

Those most frequently encountered are marasmus, rickets, and a predisposition to tuberculosis, which has its own group of symptoms.

Marasmus (*atrophia infantum*), or inanition, is simply another name for slow starvation produced from any cause whatever. There is a physiologic loss of weight after birth which should cease in a few days. When loss of weight continues it constitutes the condition known as atrophia infantum, which may vary from slight loss to great emaciation. Hirst says, "Comparatively few children die from diseases interfering directly with the functions of the heart or lungs sufficiently to produce death, while multitudes die from failure to maintain the nutrition of the body sufficiently for vital processes." Symptoms of marasmus are many. In simple atrophy the baby loses its plumpness and the muscles become flabby. The face is pale, lips thin, child fretful, takes breast ravenously, and often while nursing stops suddenly and cries passionately. The skin is moist. This condition is not infrequently preceded by attacks of acute indigestion which closely resemble the onset of some of the zymotic diseases. The bowels may be irregular, alternating between a constipated, whitish stool, consisting of undigested milk curds and stringy mucus, or there may be several loose, greenish passages in a day.

While many of these cases survive and develop weak, stunted bodies, the tendency is strongly in the opposite direction. Dr. Starr says, however, that no case should be hopeless, and emphasizes the necessity of prophylaxis after measles, whooping-cough, etc. Medicine is less important than careful dieting and management. Proper feeding, dressing, bathing, exercise, and fresh air are methods of prevention to be employed in every case.

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[1] C. H. Mayo, M. D.

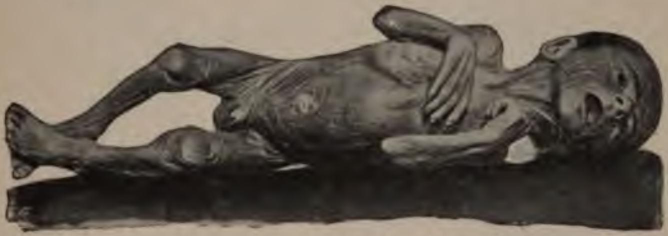

FIG. 96.—Marasmus. Five-month-old child which emaciated to a skeleton from gastro-intestinal disease (weight, 3350 grams). Movements of defense were barely noticeable (spasmodic seizures of the extremities); the skin is of a dirty color, dry, sallow, and can be lifted in folds. Panniculus adiposus almost completely disappeared. The face presents a wizened expression. The abdomen is retracted and soft. Thrush. Intertrigo of gluteal region (Hecker, Trumpp, and Abt).

Rachitis (rickets) is a constitutional defect by which the bones are poorly nourished and become malformed in consequence. There are two varieties—those in which no lime salts are deposited and those in which salts already deposited are carried away. The disease may begin before birth, but develops most frequently between the ages of six months and three years. It is the most common of all children's diseases in European cities, and occurs in this country chiefly in the poorer districts and among negroes. Rachitis consists in a cessation of the deposits of the earthy constituents of bone in the layers of cartilage cells which form normally between the epiphyses and the shafts. Consequently, these layers of cartilage do not ossify, and the earthy matter already deposited in the center of the bones is taken up by the continuous tissue changes and not replaced by new material. The bones, especially in rickets of the cranium, are so soft as to be easily cut with the scissors. The fontanelles are larger and ossify later, sometimes as late as the ninth year. The growth of the facial bones is defective and dentition is delayed. Often the teeth turn black and drop out prematurely. The rachitic trunk is short and possesses the characteristic pigeon-breast deformity.

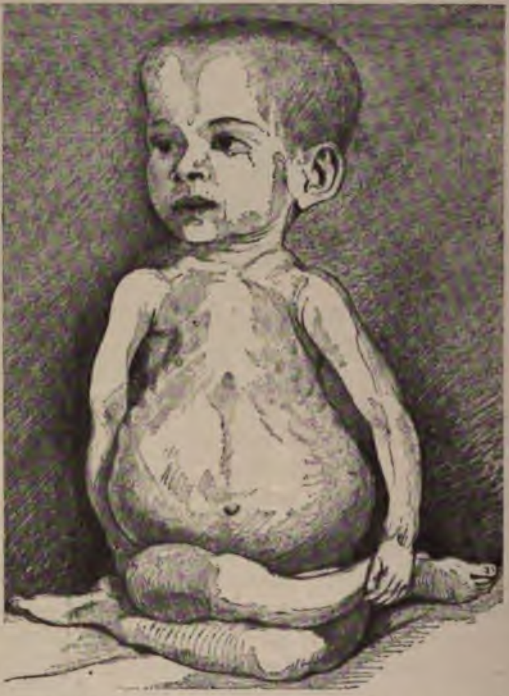

FIG. 97.—A child three and one-half years of age, presenting an extreme degree of rachitis, kyphoscoliosis, chicken-breast, and frog-belly. Every attack of bronchitis is accompanied by grave asthmatic seizures; drum-stick fingers; spontaneous loosening and falling out of the first teeth shortly after their eruption (Frühwald and Westcott).

The development of the ribs is retarded, and they are frequently hurt by pressing in lifting. The distortion of the chest walls is one of the chief sources of danger to rachitic children with pulmonary diseases. Curvature of the spine is a common result, also deformities of the pelvis. Rickets of the extremities is the common cause of curvature of the long bones. Early attempts at walking produce the well-known bow-legs and tottering walk. Premature creeping causes knock-knees. The main causes are lack of good air and proper food. The treatment is dietetic, hygienic and corrective. The various forms of hypophosphites have been found to be very useful in the treatment of rickets.

Tuberculosis claims many victims among children, and at the same time they respond well to modern methods of treating the disease. The advent of outdoor schools, summer camps and preventive sanatoria, promise much in the saving of children who are predisposed to this disease. The nurse can often be of great service in getting "suspicious" cases examined and under treatment before the disease has advanced beyond the incipient stage. Tuberculous adenitis, and tuberculosis of joints are common affections. In tuberculosis of the lymph-glands, the glands most frequently involved are the glands of the neck and of the mesentery of the intestine.

The lymph-glands are tiny filters shaped somewhat like a grain of wheat. These are scattered along the course of the lymph-vessels. These lymph-glands do an important work in draining away the products of disease.

The term "*scrofula*" has been popularly applied to a group of symptoms which often precede and accompany the tuberculous condition of the glands. Chronic nasal catarrh, or a catarrhal condition of the throat, and sometimes adenoids, help to lower the resistance of the child and pave the way for this disease. The best of nourishing food, cod-liver oil, and occasionally, where the cod-liver oil disagrees, fresh cream, and fresh air, are the chief things needed in helping children to overcome this hereditary diathesis.

Convulsions in children often usher in infectious diseases. These are often the result of some form of toxin in the system, are sometimes due to pain, and are frequently caused by presence of a large amount of indigestible substance in the stomach or intestinal tract. These occur more frequently in poorly nourished children or in those who have rickets. A hot mustard bath, the emptying of the bowel, an emetic if there is reason to believe the stomach is overloaded, and some form of sedative, frequently bromid, by rectum are the usual methods of relief. Convulsions occurring in a child previously in good health are alarming but not often fatal.

Adenoids are growths behind the palate at the back of the nose. The trouble is an overgrowth of the lymphatic tissue in the throat, and is frequently found associated with enlarged tonsils. The child with adenoids is usually a "mouth breather," sleeps poorly, snores, and has a persistent catarrhal discharge from the nose and throat. Such conditions frequently lead to deafness. The catarrhal process frequently extends to the Eustachian tube, and buzzing in the ears and attacks of inflammation of the middle ear are not uncommon. Proper breathing and proper purification of the blood becomes impossible. The child's general health suffers and frequent attacks of tonsillitis are common. Disturbances of speech are present in such cases, and the voice has a nasal,

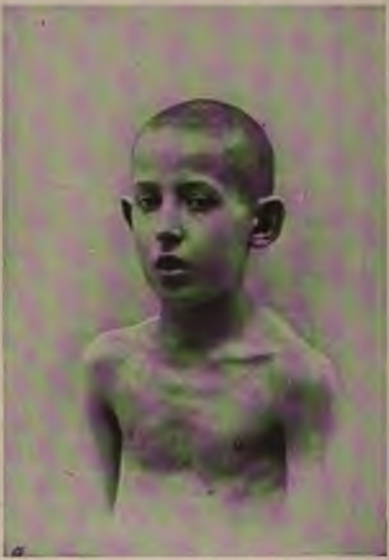

FIG. 98.—Typical appearance in adenoid vegetations: Boy ten years old (Frühwald and Westcott).

abnormal sound, as the stopping of the nose hinders clear speech. The treatment consists in removal of the tonsils and adenoids.

Precautions after Removal of Adenoids.—Use a swab of sterile cotton or gauze instead of a handkerchief so long as any oozing of blood from the nose persists. A paper bag pinned to the side of the bed, in which to place the sponges enables the surgeon to calculate the amount of blood lost.

Hemorrhage is always to be feared and conditional orders as to what to do should be understood by every nurse in charge of adenoid and tonsil cases. Remain in bed for forty-eight hours with the head supported by pillows.

Following the operation small bits of ice and ice-cold liquids may be given the child to swallow. Ice-cream is a favorite food in this condition.

Remain quietly in the house for four or five days, taking fluid and semisolid food only.

In tonsil cases secondary hemorrhage occasionally occurs a week after the operation. Most cases are uncomplicated, but after years of such cases one may encounter a severe secondary hemorrhage in an unsuspected case, in which energetic action is needed to check it.

In case of hemorrhage in such cases the nurse should be quickly able to locate tonsil clamps and the cautery. Ice externally is usually applied.

Enuresis, or inability to retain the urine, is a common ailment in childhood and one often very difficult to overcome. It is encountered more frequently in children of nervous temperament and in those who are poorly nourished or undeveloped. The ailment is a disease, not a habit, and children should never be punished for it. Training will help somewhat, and the child should be encouraged to retain the urine as long as possible during the day. Fluids should not be drunk late in the evening. The supper should be light. Circumcision sometimes helps. A physician should be consulted and all possible causes removed.

Phimosis is a tightening of the foreskin so that it cannot be drawn back. This is a common condition in boys, and many physicians as a preventive measure in babies insist on the prepuce being dilated and retracted every day and a little sterile olive oil applied. In some cases it is necessary first to separate the adhesions and stretch the foreskin, which is done by the physician. The condition if not prevented or corrected causes irritation and pain or difficulty in urination. The secretion decomposes and serious inflammation may result. Circumcision is the trea [illegible] esorted to as a corrective.

The nurse's duties [illegible] with circumcision will consist in the usual p [illegible] minor operation. The instruments needed a [illegible] hemostats, and a pair of rat-tooth forceps. [illegible] ometimes needed. Two years of age is recom [illegible] best time. It is a wise precaution to have drie [illegible] at hand to check hemorrhage in case it shoul [illegible] The baby is laid on its back with the thighs fle [illegible] domen and held by the nurse. A basin of weak antiseptic solution should be in readiness and sterile dressings. The utmost cleanliness possible should be practised in dealing with such wounds, which not infrequently become infected. Deaths have occurred after the simple operation for circumcision, though, fortunately, such occurrences are rare. In renewing the dressings the old dressings should be thoroughly soaked before removal.

Discipline is an important part of the management of sick children. In a hospital this is easily accomplished in most cases. The child soon learns that he cannot have his desires satisfied by screaming and ceases to try. In a home, the nurse has not only the child to manage but the parents, and often grandparents and aunts. Often the child has been spoiled by having every whim indulged and has been allowed to make a fuss about trifles till he has become a veritable tyrant.

It is never wise to attempt to discipline such a child till the nurse has been long enough in the home to have learnt something of conditions in general, and until the family's confidence has been gained. The doctor's coöperation also should be sought. Many nurses are adepts at managing children so as to get needed duties attended to without fuss. The imaginative qualities of the average child are highly developed. He is easily transported into an imaginary world. He is willing as a rule, to pose as storekeeper, soldier, postman, preacher, or teamster all in the same forenoon if tactfully handled and this imaginative quality is often used to get medicine taken, to increase the amount of nourishment consumed, or to help in getting examinations submitted to or painful dressings done.

Significant Symptoms.—While it is not part of a nurse's business to diagnose diseases, yet the nurse who has been trained to observe symptoms, and who uses her powers of perception for the benefit of humanity, is often able to detect important danger signals which might be entirely overlooked or misunderstood by those most immediately concerned, and which mean much in the future of the child. Nurses whose work calls them among the homes of the poorer classes of the great cities can frequently observe signs of physical defects which the parents regarded merely as "oddities" or as habits that would be outgrown. Permanent deformities can often be prevented if discovered in time and the child placed in the charge of a competent orthopedic surgeon. Disorders of vision in children can be corrected in most cases by physicians skilled in the art. Though nurses should guard against being alarmists and avoid meddling, yet the nurse who is able to detect these overlooked physical defects and direct the parents as to where to apply for correction has rendered a service to the afflicted child and to society the value of which cannot be measured.

Early signs of tuberculosis of the hip-joint, such as a slight lameness, have been laughed at as an "awkward walk." The child may wear out one shoe quicker than the other, or may complain of pain in the knee, a condition often slightly passed over as "growing pains." Growing is a painless process. "Growing pains,"[1] says a medical writer, "are rheumatism, and from neglect of that condition there are thousands of crippled hearts. A crippled heart from endocarditis results in loss of competence, distress, and shortened life. Advise every patient that all cases of growing pains should be actively treated in bed just as any other case of acute rheumatism."

A great deal of what formerly passed as stupidity in school children has, since regular medical inspection has been practised, been found to be due to a slight defect in hearing or

[1] J. S. Hart.

[illegible] which led the child to make redicu[illegible] mistakes. The presence of adenoids will often cause the [illegible] stupid expression which excites ridicule. [illegible] for stupidity or inattention and laughed at [illegible] open.

A bad breath may be the result of a disordered stomach [illegible] of catarrhal trouble, or of decaying teeth, all of which are, as a rule, remediable. Early decay of the teeth of children should lead to an investigation as to the cause.

Children of a nervous temperament have very frequently a bad reputation at school, and many a child is punished at school and at home for conditions he is powerless to overcome. The development of St. Vitus' dance is insidious, and the child is usually woefully misunderstood. An English writer, commenting on this fact, says, "The sad consequence to the child of an affection such as this so long as it is unrecognized is obvious; infirmity provokes punishment and punishment aggravates infirmity. Bad writing and untidy sums are met by scolding and slaps; these correctives in their turn produce worse writing and worse sums, until at length the disorder grows into notice and the child is put to bed."

Squinting, fidgety, jerky movements; twitching of the face, repeated attacks of [illegible] irritability of temper if unusual, night terrors, [illegible] spasmodic movements are all significant [illegible] investigation.

Hints for School Nurses. [illegible] communicable but remediable physical [illegible] number of school children than [illegible] diseases. Careful studies in various schools [illegible] two children out of three have [illegible] fourteen defective vision; one out of [illegible] and one out of twenty adenoid growths. [illegible] are usually entirely unsuspected [illegible] their parents. [illegible] they are hampered [illegible] life and causing a wastage of a considerable [illegible] into their education. One child [illegible] clearly and [illegible] a headache when [illegible] glasses would clear up the whole trouble [illegible] and listless, does not sleep well and has no appetite for his meals. The removal of adenoid growths would cure him quickly.

The school physician who detects these physical defects—and the school nurse who follows the child to its home and explains what is needed and secures the following out of the physician's suggestions—are doing on the physical side something like what the teacher is doing on the intellectual side. They are removing the obstacles to normal development, giving the boy and girl a chance for health and happiness and efficiency."[1]

Convalescence from children's diseases is apt to be a serious test of a nurse's resources, and there are many dangers to be guarded against. Quite frequently the child becomes more irritable when the acute symptoms have begun to subside. It is not easy to measure a child's strength, and it is common to allow little patients to become overfatigued by too much talking or exertion. Games need to be wisely chosen, so that too much effort is not required. Plays requiring much skill are better avoided till the strength is pretty well established, as failure may react unfavorably. The nurse in charge of a chronic case should study some of the innumerable forms of simple occupations which children delight in, always adapting the occupation to the patient's strength and physical handicaps. The diet needs to be especially wisely managed even after restrictions have been withdrawn.

The care of a child through a case of protracted illness and convalescence, especially if he is surrounded by overindulgent relatives, calls for resources of a high order, but it is a form of nursing which in the end brings more than the ordinary measure of satisfaction.

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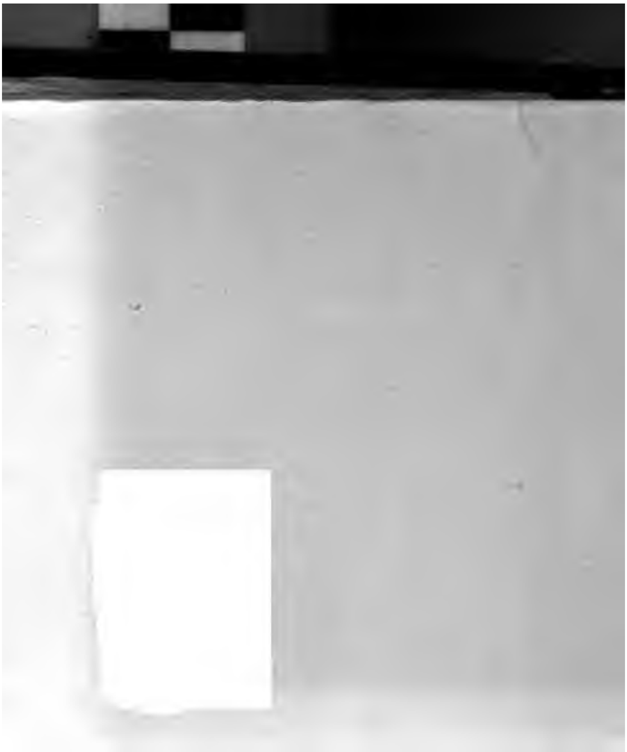
[1] Health News, N. Y. State Dept. of Health.



NOTES

NOTES

SECTION III

SURGICAL NURSING

CHAPTER XXIV

SURGICAL PRINCIPLES AND PROCEDURES

Before a nurse is fitted to assume any responsibility in surgical nursing she should be familiar with the elementary principles of bacteriology, especially with the necessity for surgical cleanliness and the different methods for securing it. Her knowledge regarding sterilization should be clear and definite. Surgical work done by guesswork can never be reliable. She ought to know before she has been long on duty in the operating room the length of time required for and methods of sterilization, of all surgical materials in common use. A review of the chapter on surgical cleanliness and disinfection in "Primary Studies for Nurses" is suggested as a prelude to this lesson.

The term *surgery* (derived from a Greek word meaning chirurgery, or handiwork) is "that branch of the medical art which deals with the external parts of the body or with such ailments as can be seen or touched and helped by handiwork, removed by knife or saw, soothed by fomentations, or supported by splints or bandages."

The *principles of aseptic surgery* are mainly based on the following considerations:

1. No unsterilized object is clean from a surgical standpoint.
2. Healthy, clean tissues contain no pathogenic bacteria except superficially.
3. Wounds in healthy tissues free from bacteria tend to heal spontaneously.
4. Antiseptics are more or less irritant and tend to interfere with the healing process.

5. If pathogenic bacteria be excluded from a wound antiseptics are unnecessary and often hurtful.

Sources of Infection in Wounds.—1. *Infection by the Air.*—The risk from this source is small, unless dust is actively stirred up by shaking blankets or clothing or by sweeping and dusting just before an operation.

2. *Infection by Water.*—While ordinary water swarms with microörganisms, boiling for a half hour or even less—ten minutes some surgeons say—is sufficient to destroy these. There is nothing to prevent the water again becoming unclean from a surgical standpoint if precaution to exclude floating dust is not observed.

3. *Infection from the Skin of the Patient.*—In spite of the most rigid personal cleanliness the surface of the body, the sweat glands and ducts, and the hair follicles harbor innumerable microörganisms, necessitating a thorough preparation of the skin.

4. *Infection from the Hands of Surgeon, Assistant, and Nurses.*—This is now recognized as one of the most fruitful sources of wound infection, and it is impossible to overestimate the importance of all who take any part in an operation cleansing and disinfecting the hands most thoroughly.

5. Infection from instruments or drainage.
6. Infection from clothing of patient or operator.
7. Infection from ligatures and sutures.
8. Infection from sponges or towels.
9. Infection from dressings.

Every nurse is or ought to be familiar with the measures for preventing infection from any of these sources. It is important to remember that, after the most careful preparation and the most rigid technic in the operating room, there still remains in many cases the possibility of the dressings becoming displaced by the slipping of a bandage or the loosening of an adhesive strap, and infection taking place from the bed clothing or the patient's clothing.

Measures for Preventing Wound Infection.—1. Ordinary personal cleanliness on the part of patient, surgeons, and nurses.

2. Surgical cleanliness of the part to be operated on.

3. Surgical purification of instruments, sponges, ligatures, and dressings coming in contact with the wound.

4. Surgical cleansing of the hands of surgeons, nurses, or others taking part in the operation.

5. Irrigating the wound with antiseptic solutions when the wound has been infected before operation.

6. An atmosphere as nearly surgically pure as possible.

7. Avoidance of all sources of contamination during the operation and at subsequent dressings.

Hand Disinfection.—While all agree as to the importance of this procedure, the ideal method has yet to be evolved. Experiments are constantly being made and new methods advocated. Many different methods seem to yield equally good results. On one point most surgeons agree—the necessity of great thoroughness in the preliminary cleansing with soap and water. When this is thoroughly done the chemicals used later are of less importance. Carelessness or the habit of not being sufficiently careful in this preliminary scrubbing is one of the faults of many otherwise capable and faithful nurses. A bacteriologic and clinical study of hand disinfection in a German Hospital gave the following results, which should serve to impress on nurses the fact that a careless, half-way scrub and the dipping of the hands for a moment into a disinfectant solution is not hand disinfection.

The hands of 193 persons were subjected to the following treatment: The hands were disinfected by washing for three minutes with warm water, soap, and nail-brush; they were dried with a sterile towel. The nails were then cleaned. The hands were then washed again as above for five minutes. The hands and nails were now rubbed with gauze saturated with 60 per cent. of alcohol for two minutes. Finally the hands were rinsed in 1 per cent. lysol solution for three minutes. After this cultures were taken without rinsing off the lysol, for, though the latter substances might be carried into the culture and possibly inhibit the growth of any bacteria present, this is the condition in which the hand is introduced into the vagina for obstetric purposes. Of the 193 persons treated as above the hands of only 4 were found to be sterile.

The principal points regarding hand disinfection may be summarized as follows:

1. The necessity of cleansing the surface and all accessible harboring places for dirt.

2. The necessity for avoiding irritation to the skin of every description, and removing those influences which relax its structures and favor th[illegible] microörganisms.

3. The protection o[illegible]croörganisms which give rise to suppuration.

4. Frequent disinfe[illegible]ace of the hands during the operation.

Diluted alcohol use[illegible] minutes after thorough preliminary cleansing i[illegible]erred by many surgeons.

The *field of operati*[illegible] prepared, if an incision through the skin has to be made, in much the same manner as is used in hand disinfection. The painting of the skin with iodin, as a final precaution before the incision is made, has become general in recent years.

Dressings are materials used as a protection to wounds and for the purpose of absorbing discharges. Plain absorbent gauze and cotton are the materials most frequently used. The methods of preparation of aseptic and antiseptic dressings need not be repeated here. These are best learned by actual practice under efficient direction.

Ligatures are materials used for tying blood-vessels or strangulating a part. Catgut, kangaroo tendon, or silk are used for this purpose.

Sutures are stitches made through the edges of a wound to approximate them and hold them in position till union takes place. Materials used for this purpose are silk, catgut, silk-worm gut, kangaroo tendon, silver wire, and horse hair.

For deep sutures catgut and kangaroo tendon are chiefly used. These are capable of absorption and do not require removal. Non-absorbable material may become encysted and do no harm, but irritation frequently occurs.

Suture or ligature materials may be factors in determining the fate of the patient. It is quite true that in surgery life sometimes hangs by a single thread. The careful preparation and handling of these materials therefore is most important.

Catgut is obtained from the intestines of the sheep. The raw material contains fat and is infected with germs. There are probably a hundred different methods of preparing catgut, a few of which will be found in the appendix. Reliable suture material can be purchased from manufacturing chemists in sealed tubes or bottles. Catgut is rendered worthless by soaking in water, hence a dish of alcohol must be in readiness to receive the catgut when the tubes are opened. The tubes or bottles are either sterilized on the outside with a sublimate solution or covered with gauze. A supply of catgut ligatures from 8 to 9 inches in length should be cut off, twisted into rings, and laid in the alcohol in readiness when they are likely to be needed. Sutures (one or two at least) should be threaded in advance of the surgeon's needs, and the nurse who threads needles during an operation should observe carefully what the surgeon is doing so as to hand him the size of suture and ligature he desires. Brickner says, "In general, sutures should be about 12 inches long, depending upon the length of the wound to be united and the manner in which the stitches are to be placed. It is a less serious fault to cut a suture rather too short than to have one too long, for long threads are apt to drag over the skin and are awkward to manipulate.

"In threading, the suture should be held close to its end between the right thumb and forefinger, the needle correspondingly held in the left hand being passed over it. If the needle-eye rebels against the passage of a piece of catgut or kangaroo tendon the difficulty can usually be overcome by cutting the end of the suture obliquely and flattening it by pressure between the handles of the scissors."[1]

Ligature and suture materials are among the most costly of hospital supplies, and a careless surgical nurse by cutting the strands too long or improper handling can easily waste as much suture material as is actually used in the wound.

Dry, sterilized catgut is preferred by many surgeons, and is a very convenient form for use. When wanted, an assistant tears open the outer envelope, when the inner aseptic wrapper

[1] Brickner, "The Surgical Assistant."

containing the strand can be removed by the surgeon or instrument nurse. This form of catgut ordinarily absorbs in about five or six days.

Chromicized catgut is catgut prepared by soaking in a chromic-acid solution with a view to rendering it more durable and less quickly absorbed.

Silkworm gut, or gland silk, is obtained from silkworms when they are about to begin the spinning process. The strands are of various lengths, sizes, and qualities, but the percentage of strands that are surgically perfect is small, and the material consequently is high priced. It is not absorbed, is less likely to become infected than catgut, and is much used for superficial sutures. It may be sterilized for immediate use by boiling for ten minutes. If it is desired to store it, alcohol is sometimes used or a solution consisting of one part iodin crystals in 60 per cent. ethyl alcohol.

Kangaroo tendon is prepared from the strong tendon of the tail of that animal and is used chiefly for buried sutures. It absorbs very slowly, and may be purchased, ready for use, from manufacturers of this class of surgical supplies. The strands are hard and usually need to be softened slightly in a sublimate solution before using.

Silk for ligatures may be sterilized by boiling for ten minutes in a normal salt solution. Successive sterilization weakens the silk, and it is best prepared in small amounts as needed. Linen thread is prepared for use in the same way.

Linen.—A hard-twisted, iron-black dyed Irish linen is much used. It is sterilized by boiling. Numbers 25, 30, and 50 are most in demand.

Horse hair after thorough preliminary cleansing in soap and water and later in alcohol or bichlorid (1 : 1000), may be prepared by boiling for five minutes. It is used occasionally for superficial sutures in the face and neck. Long boiling renders it brittle.

Silver wire is occasionally used. It has great strength and certain antiseptic properties. When it is used it is chiefly in wounds where there is considerable tension on the edges. The button suture is the most common method. It is prepared for use by boiling for twenty minutes in normal salt solution. "All pieces of silver wire should be saved, as the manufacturers allow for the silver returned."

Suturing needles are of many varieties. Many special needles are named for the surgeons who designed them. A few of the varieties are straight surgeons' needles, half-curved surgeons' needles, full-curved surgeons' needles, Hagedorn's double curved, Ferguson's needles with cutting edge, Henderson's, Ferguson's round needles, self-threading with spring eye, Packard's French fistula needles, Tait's triangular needles, Sims' trocar point, Sims' lance point, Emmet's round, Kelly's intestinal needles, Kelly's gynecic needles, Murphy's trachelorrhaphy needles, Skene's needles, Keith's abdominal needles, Palmer's uterine needles, Glover's needles, cambric needles.

Needles are prepared by boiling for five minutes. Syringe needles should be boiled with the wires in place to remain till needed for use.

Instruments, except knives, are prepared for use by boiling in water alkalinized with soda carbonate. A 1 per cent. solution is sufficient.

Knives may be sterilized by soaking in a 1 per cent. lysol solution or by dipping in carbolic acid and afterward in alcohol. Prolonged immersion in a solution of carbolic acid, 5 per cent., is also practised.. *Boiling* injures the cutting edge. Some surgeons prefer to boil delicate scissors, scalpels, etc., for one-half minute to chemic methods of disinfection. In cleaning such instruments care should be used to avoid injury to the delicate edges.

In boiling instruments the more delicate ones should be carefully laid on top of the heavier instruments in the sterilizer.

Drainage in wounds is employed to prevent accumulation of pus, serum, or wound secretions. Two kinds are commonly used—the tubular and capillary drains. Rubber tubes with perforations are frequently used and are sterilized by boiling for ten minutes. To prevent them working down into the wound a sterilized safety-pin to transfix the tube should always be provided. A combined tubular and capillary drain is sometimes needed, and for this a perforated glass tube with gauze loosely packed about it in the cavity is used.

Capillary drainage is effected with strips of gauze or sometimes a strand of silk.

The *Mikulicz drain* is used where compression is required to check oozing. It serves the double purpose of arresting the bleeding and draining at the same time. It is made by placing a square of gauze arranged in proper size and shape in the center of a cavity and surrounding it with smaller strips of gauze rolled reasonably tight.

Gutta-percha tissue i ashing in green soap and cold water and rinsi ter and immersing in a sublimate solution, 1

Rubber gloves may oiling for ten minutes in a normal salt solutio y are washed, dried with a towel, dusted with n both sides, and placed in a box protected fro is desirable to keep them ready for immediate cy, they may be boiled after using, dried with l, powdered with sterile talcum, and wrapped in a sterile towel. Another method is to first sterilize by boiling for ten minutes, immerse in a corrosive sublimate solution (1 : 5000) till required for use. In boiling gloves care should be used to ensure the whole glove being immersed. It is not uncommon to find gloves floating on a basin of water while undergoing sterilization.

A point worth remembering in reference to the effectual sterilization of rubber gloves by boiling is to insert a large drain of gauze into each glove so that it will not collapse, and free access of the boiling water to its interior is not prevented. Many operators require boiling after use. The gloves are then dried between sterile towels. A cloth folder which opens like a book is used for each pair of gloves. In a pocket on each side of this glove folder the glove (size marked) is placed with cuff turned back and well powdered. It is then subjected to steam sterilization for not less than thirty minutes.

Operating-room methods must vary in different hospitals according to physicians' technic, hospital equipment, and the number of nurses assisting. The average operating-room force of workers consists of a chief surgical nurse, who is in general charge, a senior and junior pupil nurse.

Much confusion and worry will be avoided if nurses are taught as they are sent on duty in the operating room the duties for which each nurse is responsible, and the general routine which must be followed. Before a nurse goes into the operating room she should be taught the importance of faithfulness in the very least of all duties committed to her, the necessity of economy of time and materials used, and of her responsibility in the general outcome of operative procedures. Duties for each nurse may be classified as follows: things to be seen to (*a*) before the operation; (*b*) at the beginning of the operation; (*c*) during the operation; (*d*) at the close of the operation.

The *chief surgical nurse's duties* vary. She has general charge of the operating room, anesthetic room, aseptic preparation room, emergency room, sterilizers, etc. She is responsible for the condition of the instruments, must keep them catalogued, counted, and be ready to account for them at any time. All surgical material used throughout the hospital is prepared under her direction. She superintends and assists in the preparation for the operation and may act as second assistant. She is held responsible for the proper labeling of pathologic specimens, and must see that they reach the pathologic department in good order. She instructs her assistants as to their duties.

The *senior pupil nurse* has for her special work the preparation of all unsterilized material. She does the work of the clean or sterile nurse at operations; is held responsible for handing and counting the sponges and also for replenishing the supplies throughout the house. In preparing for operations she is held responsible for the presence and condition of the operating clothing, the gowns, face-masks, and aprons of the surgeon and all his assistants, also for the brushes and rubber gloves.

The *junior nurse* does all the duties that fall to the lot of the unsterilized or general nurse. During operations she supplies visitors with gowns, lifts the patient to and from the table, assists in preparing the field of operation, empties basins, and renews solutions, keeps the floor clear and clean, picks up fallen instruments, is responsible for the operating blankets and arm or leg supporters, changes the patient's gown after operation, and assists the anesthetist as may be necessary. She is responsible for the dusting of the operating room, for cleansing rubber goods for the tables, pillows, and their coverings. Prior to operations she assists in preparing dressings. The arranging of the anesthetist's table is included in her duties. After operations she removes the blood-stains from clothing and collects it for the laundry.

This outline is suggestive of the manner in which duties are divided.

Definite detailed lists should be posted of the articles which are to be included for every operation. Among these essentials may be included containers for sterile solutions, utensils needed for preparing the field of operation and for irrigation, receptacles for waste materials, basins for catching discharges from any part of the body, the necessary instruments, dressings, gowns, suture material, etc., and the necessaries for the anesthetist's table.

In the *utensil sterilizer* will be placed the articles to be boiled. In the sterilizing room a list of the articles to be sterilized in the utensil sterilizer should be posted or kept in a book. Nurses should not have to depend on their memories for these lists, and should be censured for forgetting needed articles only when they have failed to carry out the written instructions.

The things to be included on the "unsterile" nurse's table and her duties at the different stages of the operation can all be listed for her guidance, and will save much oral instruction and much confusion. Likewise, a detailed list of the sterile nurse's duties should be written somewhere where she may have frequent access to it when beginning her work as a sterile nurse. She should also have definite instruction as to arrangement of sterilized material, so that it can immediately be handed when needed.

Anesthetics and Anesthesia.—The administration of anesthetics is decidedly in the physician's rather than in the nurse's province, and nurses should remember that the fact that nurses have been taught to do the work successfully, or that prominent surgeons insist on having a nurse to assist as anesthetist, does not make the practice legal for nurses.

However, any nurse may be called to assist in this way in emergency, and nurses are expected to understand something regarding methods of administration and danger signals. Postgraduate training under a competent instructor, continued for several weeks or months, is necessary for the nurse who expects to become an anesthetist. Nurses have not sought this responsibility. They have had it thrust upon them and, as before stated, the legality of the procedure has yet to be decided. The nurse who undertakes this work treads on dangerous ground, and this fact should never be forgotten.

Care of Inhalers.—This is an important consideration. In some hospitals, to prevent infection being conveyed from the mouth and air passages of one patient to the patients following, the hands of the anesthetist are washed between operations, the mask is sterilized, a fresh piece of sterile stockinet is put on it, and for folding around the mask, sterile gauze is used. When the work of the day is over the stockinet and gauze are washed, sterilized, and used over again.

In other institutions the upper air passages are sprayed with albolene in all cases in which ether is to be given. Ether masks and atomizer tips are boiled before using.

The *anesthetist's table* should contain a bottle of chloroform, cans of ether, chloroform drop-bottles, ether inhaler, small pot of vaselin, tongue forceps, clean towels, small basin, swabs of cotton or gauze with forceps for cleansing the mouth of mucus, mouth-gag, hypodermic syringes, charged and uncharged; brandy, nitrite of amyl, strychnin, atropin, nitroglycerin, adrenalin, and morphin.

Anesthetics may be classed as localized and general.

Cocain is the most widely used of all local anesthetics. It may be applied by dropping from a medicine dropper, in the form of a spray, by a twist of cotton on an applicator, or given hypodermically. Cocain solutions deteriorate rapidly and are best made up freshly as used.

Chloroform is preferred in brain and eye work, when lung and kidney disease is present, and, being quicker in its effects, is much used when profound anesthesia is not desired, as frequently occurs in child-birth and for examinations.

"Chloroform is a depressant to all muscular tissue. It depresses the heart muscle and the respiratory center, causing a small compressible pulse with shallow breathing. The warning signals in ether come gradually, while with chloroform the danger mark may be reached in a few seconds."

Ether is less powerful than chloroform, slower in producing effects, but safer in most cases. Ether is a cardiac stimulant causing a full bounding pulse and deep respiration. Ether is inflammable, while chloroform is not.

Nitrous oxid is freq [illegible] a preliminary to other general anesthetics.

Alcohol, chloroform, [illegible] res (A. C. E. mixture) are often given with a [illegible] ng the ill or disagreeable effects of pure chlorofo [illegible]. The proportion commonly used is alcohol [illegible] m 3 parts, ether 1 part, though the proportion [illegible] vo drugs are frequently varied.

Contra-indications to ether are quoted as extreme age, cases with marked sclerosis of the arteries; chronic nephritic cases with a large percentage of albumin and tube casts; cases in which bronchitis is present and in various types of heart affections.

Preparation of the patient includes usually a purgative the day before operation and an enema a few hours before anesthesia. No food should be given for at least four hours before. Constricting bands should be loosened, false teeth removed, the bladder emptied, the patient placed flat on the back without a pillow or with but slight elevation of the head. The cheeks and lips are anointed with vaselin or cold cream.

Administration.—The inhaler is placed over the nose and mouth; the ether is dropped slowly until the patient becomes accustomed to the fumes, when it is given more rapidly; after the slight coughing, which is common in the beginning, is past, the patient is enjoined to take deep breaths. There is frequently, though not invariably, a stage of excitement. The practice now so common of giving morphin hypodermically before the operation has markedly lessened the difficulties which frequently characterized this stage. If the anesthetic has been given slowly and very cautiously, there is less likely to be a marked stage of excitement.

Signs to be Watched.[1]—Among the signs to be watched Brickner mentions:

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[1] "The Surgical Assistant."

The position of the arms.
The color of the lips.
The pulse and respiration.
The eye reflexes.

The *position of the arms* has been a prolific cause of paralysis of one of these members following anesthesia. "The common practice of drawing the arms alongside the head is a bad one, and should not be tolerated. The arms should never be allowed to hang over the edge of the table. The safest rule to follow is to avoid allowing either arm to remain more than a few minutes in any one position, however innocent that position may appear to be. The care of the arms is as important a part of the anesthetist's duty as is the administration of the anesthetic."

"The *color of the lips*, of the lobes of the ears, and of the escaping blood is an index to the extent of the oxygenation in the lungs. Slight cyanosis, especially during etherization, does not call for treatment if present from the beginning. Deeper cyanosis is an indication for freeing the air passages if they are obstructed by mucus, or by the falling back of the tongue, for the allowance of more air, or (more particularly in the presence of other signs) for the withdrawal of the anesthetic."

"The *pulse* should be watched constantly and by the anesthetist himself. . . . Enfeeblement of the pulse is a matter of concern, but not necessarily of alarm. A pulse that is both rapid and feeble, if the symptom is a progressive one, requires treatment. It must be decided whether it is the result of shock, loss of blood, insufficient aëration of the blood, or the cumulative effect of the anesthetic." The measures used depend on the cause.

The *respiration* in the first stage is often jerky and irregular. In the second stage it should be regular, slow, and deeper. The falling back of the tongue, which is a partial cause of difficulty in respiration, can usually be overcome by lifting the jaw forward by pressure underneath. It is advisable to change from side to side of the jaw to avoid soreness from continuous pressure on one spot. If this measure does not relieve the stertorous breathing, the tongue may have to be drawn forward with tongue forceps. The pharynx must be kept free of mucus accumulations.

The Eye.—Avoid touching the eye over the cornea. The sclera may be touched frequently without injury. The response will differ with different individuals. "By the changes in the size of the pupil (unless morphin has been given) the anesthetist may measure the depth of the narcosis." An alteration from moderate dilatation to contraction frequently means deepening of th [illegible] vice versa. If extreme dilatation of the pupi [illegible] y during deep narcosis, it tells the anestheti [illegible] allowed his patient to approach too near the [illegible]

Practical Points.[1]—" [illegible] thing developing during the induction of narco [illegible] ie to crowding, which is the most common of m [illegible]

"The respiration is b [illegible] listening to the breathing. The faintest indication of a snoring respiration means that the surgical degree of anesthesia has been reached.

"Slight pallor developing during the course of the narcosis should always be regarded as a danger sign. It means that the patient is in profound anesthesia and that the heart is threatening collapse. The mask should be removed promptly and the patient allowed to breathe pure air.

"The accumulation of mucus in the mouth, the appearance of a tear in the eye, beads of perspiration on the brow, all mean that the anesthesia is becoming superficial, that more anesthesia is required.

"If the patient suddenly show signs of awakening and vomiting begins, the face is turned to the side, the mouth and pharynx are cleansed gently with a piece of gauze, and the anesthetic is continued, drop by drop.

"The ideal narcosis is tranquil. It resembles a natural sleep. The breathing is unimpeded and easy. Any change in the character of the breathing sound or the rhythm demands attention."[2]

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[1] Frederick Emil Neef, M. D.

[2] These notes on administration have been compiled from "The Surgical Assistant," by W. M. Brickner, M. D., and "Practical Points in Anesthesia," by Frederick Emil Neef, M. D., to which two volumes nurses desiring a more complete study of anesthesia are referred.

Vomiting After Anesthesia.—Possible causes of vomiting after anesthesia have been summarized as follows:[1]

1. The habitual state of the patient.
2. The disorder which led to the operation.
3. Faulty preparation for the anesthetic, or way of giving it.
4. The swallowing of mucus, blood, etc.
5. The operation or some complication following it.
6. Faulty after-treatment.

People of nervous temperament are liable to suffer from vomiting if much anxiety has preceded the operation, also those whose blood is charged with impurities from overfeeding or defective elimination.

The expansion of the chest may be hampered afterward by posture, pain, or bandaging. Diaphragmatic respiration may be prevented so that elimination is delayed.

Faulty after-treatment may consist in jolting, feeding, and allowing movement too soon; by neglect to ventilate the room; by allowing noise and emotional disturbance.

Preventive measures may need to include medicinal, dietetic, and hydrotherapeutic treatment. The surgical preparations should be made so as not to cause alarm. The teeth should be cleaned and the mouth well rinsed before anesthesia. Washing out the stomach may be necessary before return to consciousness, especially in cases in which intestinal contents, mucus, or blood have passed into it.

If *vomiting is frequent* a half-pint of hot water containing a teaspoonful of soda bicarbonate is often given. This causes an effectual and final vomit, or else helps to carry the stomach contents into the bowel.

Iced champagne, clear hot tea, the fumes of vinegar, or mustard plaster over the stomach are all measures used with more or less success.

Handing instruments is a work which must be largely learned by experience, and in order to be expert at it one must know the instruments by name and their uses. There are few nurses comparatively who do not at some time have to assist in this way, though it may not be a part of their [illegible] duties in the operating room. It is very easy not to [illegible] about instruments because one is not required to hand them. It is easy also to become familiar with the purposes, names and appearance of the instruments. It all depends on whether a nurse is ambitious enough to try to help herself to knowledge that is lying around her waiting to be picked up. Much can be learned in this line apart from formal classes when the instruments are being gotten out for an operation and washed afterward. Brickner says: "No duty that an assistant can assume is apt to tax his forethought, skill, and patience as that of handing instruments. He must at the same time deliver what is needed at the moment, cleanse and replace appliances that have been used, and be ready with what may be required next. His duty is to anticipate the operator's needs and to adapt his armamentarium to conditions as they are developed. The instruments themselves should be laid out as nearly as possible in the order in which they will be needed. It will be convenient for the instrument hander to lay aside for his own use in preparing sutures, packings, and the like a pair of straight scissors, a pair of curved scissors, a pair of thumb forceps, and, if the sterilizer is kept at hand, a pair of dressing forceps to lift instruments out of it. Syringes are to be tested and the adjustment of complicated instruments carefully inspected."

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[1] J. D. Mortimer in "The [illegible]

The management of needles, the kind of needles required for different work, the rapid threading of the needle, the adjustment of the needle in the needle-holder, and the proper method of handing it to the operator are all things to be practised long before the time one needs to be responsible for such duties at an operation. The nurse who desires to become expert as a surgical nurse may very profitably make a careful study of "The Surgical Assistant," by W. M. Brickner. If required to hand instruments or assist at the wound, the chapters on those subjects will be of special value. Another book which is of special value to operating-room nurses is "The Operating-room and the Patient," by Fowler.

Surgical technic is every year being brought more nearly to perfection, and the details of asepsis can only be learned by knowing the principles and carefully practising the best that is taught.

Things to Remember.—That every unsterilized object is unclean from a surgical standpoint.

That a thorough preliminary scrubbing of the hands is the first great essential in hand disinfection.

That frequent rinsing of the hands during an operation is as necessary for the nurse as for the surgeon.

That a door handle may become a carrier of infection.

That keeping the hands out of pus or septic material and keeping them soft are as necessary for the surgical nurse as for the surgeon.

That hands supposed to be sterile should not be allowed to touch any object needlessly.

That redisinfection after touching an unsterilized object is as necessary as primary disinfection.

That a chain of aseptic technic is no stronger than its weakest link.

That every one on duty in the operating room is responsible for watching for errors in technic and reporting them at once to the person in charge of the operating room.

That unnecessary talking while an operation is in progress should be avoided.

That there is a right way and a wrong way of handling basins in an operating room, and nurses should study to use the right method from the beginning.

That in packing dressings in a sterilizer care should be observed not to wedge them in so tightly that steam cannot penetrate and sterilization cannot take place.

That a good conscience is the first and greatest qualification for operating-room nurses.

That there are no little or unimportant things in surgical work.

CHAPTER XXV

WOUNDS AND THEIR COMPLICATIONS

A **WOUND** is defined [illegible]f the continuity of an internal or external su[illegible]y.

There are various n[illegible]ifying wounds, but the following are the class[illegible]e nurse will commonly have to deal:

Incised wounds are c[illegible] sharp instrument and their length is greater t[illegible].

Lacerated wounds are [illegible]t tissues.

Contused wounds are bruises made with a blunt instrument. There is usually more or less discoloration of the parts owing to the laceration of small blood-vessels.

Punctured wounds are those in which the depth is greater than the length. These are made with sharp-pointed instruments.

Gunshot wounds are wounds produced by a projectile from a gun or similar weapon.

Poisoned wounds are those which are inoculated at the time they are produced.

Aseptic wounds are wounds free from pathogenic germs.

Septic wounds are wounds which are infected with pathogenic germs.

Repair of Wounds.—The first step toward repair is the plugging of severed blood-vessels. In an aseptic wound when the tissues are adjusted an exudation of serum from the wound surfaces glues the parts together. New cells are thrown out and multiply till the healing is complete. This is termed healing by first intention, or immediate union. If the wound is not aseptic, or if the edges cannot be brought together, healing by granulation takes place. Granulation tissue gradually fills up the wound and eventually changes into fibrous tissue. "Healing under a scab is healing by granulation tissue. The scab consists of dried blood and lymph, and is nature's method of providing an aseptic dressing."

Reparative congestion is a term used to describe the cell changes which occur after some profound impression has been made upon living tissue and the normal processes have been interrupted. It is the reaction of tissue to injury. The human body has a wonderful power of self-repair, and immediately an injury occurs nature begins her efforts at repair and reconstruction. This condition was formerly recognized as "simple inflammation," but the tendency of modern surgeons is to limit the term "inflammation" to destructive changes and to cease to apply it to reparative processes.

Hyperemia is an increased flow of blood to a part. When a wound or injury occurs the blood-vessels dilate, the flow of blood is quickened, more blood is brought to the part, and the corpuscles begin to accumulate along the walls of the blood-vessels.

When the current slackens congestion has begun. The process if uncomplicated by infective germs may quickly subside. If the crowding of blood-cells in the part continues the blood-stream is interrupted and stasis occurs.

The *causes of hyperemia* and reparative congestion are usually either heat or cold, chemic action, or injury.

"An *infection* is the morbid process induced by the invasion and growth in the body of pathogenic bacteria."

"An *intoxication* is the morbid condition caused by the absorption of toxins." (Osler.)

Infective inflammation is defined as "a bacterial invasion of living tissue after an injury or at a time when nutrition is so impaired that the normal cell elements cannot resist their attack."

Symptoms.—Pain, heat, redness, swelling, and impaired function. All these symptoms may be present in a mild form in reparative congestion until repair is completed and the normal processes reëstablished.

Constitutional symptoms of inflammation depend on the amount of toxic matter thrown out from the infected part. In general, these are fever, increased pulse rate, general impairment of vital powers, loss of appetite, stupor which may increase to coma; chills are not uncommon at the beginning.

Exudation is a term applied to the escape of some of the white-cells and plasma from the vessels into the tissues. The white corpuscles are able to pass through the walls of the vessels without damaging them, and once outside the blood-vessels are known as phagocytes.

The *phagocytes* are at once the scavengers and the natural protectors of the body, whose function it is to resist invasion of the tissues by fo [illegible] nder certain conditions the phagocytes have th [illegible] up and ingest the invading germs and destroy [illegible]

Hemorrhage occu [illegible] progress of inflammation when the vessels rup [illegible] lood-cells are forced out by pressure from withi [illegible]

Results of Infla [illegible] *solution.*—The vessels and tissues may gradu [illegible] e cells which have been obstructing the part, [illegible] e part return to its normal condition.

2. *Adhesions*, or thickening, may result, some of the inflammatory products remaining and being converted into fibrous tissue.

3. *Suppuration* may occur. The invading germs may cause death of the white corpuscles and cells of tissue in great numbers. The broken-down tissues liquefy and form a creamy liquid known as pus.

4. *Gangrene* or destruction of a considerable proportion of tissue may occur.

A *slough* is a portion of dead tissue in or cast out from living tissue.

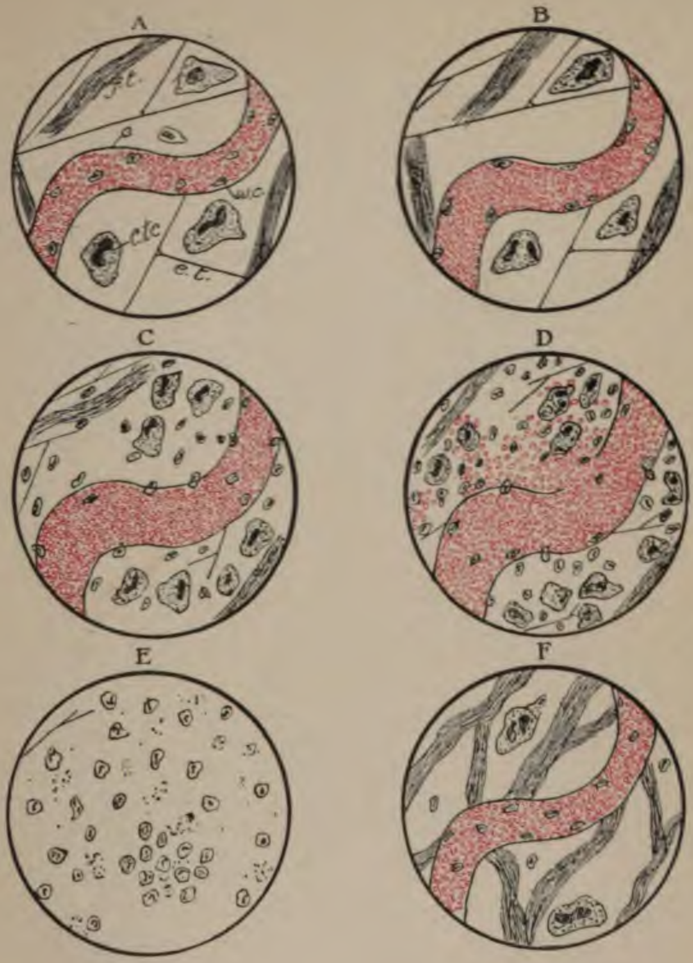
A *sequestrum* is a piece of dead bone that has become separated from sound bone.

Ulceration is a term applied to the process of suppuration, or breaking down of tissue, when it occurs on the skin or mucous membrane.

An *abscess* is a circumscribed cavity containing pus. It occurs in the deeper structures.

Degenerative changes, such as atrophy, hypertrophy, heart affections, sclerosis, or chronic degenerative changes of various kinds may result, the inflammation assuming a chronic form.

The *treatment of inflammation* is directed to combating the bacterial invasion by the use of antiseptics and disinfectants,



Changes in the blood-vessels and tissues due to inflammation. (From Russell Howard's "Surgical Nursing," by permission of the author.)

A. Normal capillary blood-vessel and connective tissue: *f.t.*, Fibrous tissue; *c.tc*, connective-tissue cell; *w.c.*, white blood corpuscle; *c.*, capillary; *e.t.*, elastic tissue.

B. First change. Dilatation and congestion of blood-vessel; the white cells arranged along the sides of the vessel wall; exudation of serum.

C. Second change. Blood-vessel dilated and congested; exudation of white cells (phagocytes); multiplication of fixed connective-tissue cells; fibrous and elastic tissue indistinct.

D. Third change. Rupture of the congested vessel and escape of red corpuscles; multiplication of connective-tissue cells, normal tissue very indistinct.

E. Pus. Breaking down of the whole tissue, due to the presence of micro-organisms; suppuration.

F. Chronic inflammation. Blood-vessel small; great increase of fibrous tissue.

by heat or cold, by removing the source of infection as far as possible, by relieving tension, and by medication, stimulating the excretory organs to throw off the toxic substances that accumulate in the system.

SURGICAL FEVERS

A *postoperative rise of temperature* may be expected in most patients in which the operation has been at all serious. This condition is frequently termed traumatic fever. It sometimes reaches 101°F., but rarely lasts more than a few days. It is not an indication of bacterial invasion.

Constipation is one of the most common causes of a sudden rise of temperature in surgical patients. If a free evacuation is not followed by a drop in temperature, other causes should be sought for.

Tension is another very common cause of elevation of temperature. A tight stitch, a blocked drainage-tube, bagging of pus, the caking of discharge in a deep dressing, or any other condition preventing the free escape of discharges, and causing absorption of toxins, very soon manifests itself by raising the temperature.

Related probably to tension is the rise of temperature observed sometimes in cases where cavities have been packed with iodoform gauze or other packing. A fall of temperature frequently follows the removal of the packing.

The onset of sepsis or of any of the septic diseases, such as erysipelas, septicemia, etc., is usually ushered in by a sudden rise of temperature.

Excitement of any kind, fear, or profound mental disturbance, is a common cause of rise of temperature in neurotic patients.

A high temperature may result from some condition quite apart from the patient's surgical state, such as the onset of bronchitis, or various other affections. In tubercular patients a rise and fall of temperature is the rule whether the surgical disease is of a tubercular character or not. Among the somewhat uncommon causes of postoperative elevations of temperature may be named small pulmonary emboli, pericarditis, phlebitis, and thrombosis.

Sapremia, or septic intoxication, occurs as a result of putrefactive processes set up by certain forms of bacteria which produce poisons called ptomaines. The severity of the symptoms depend on the quantity absorbed. When the putrefaction is removed the symptoms of sapremia subside if the quantity of the poison absorbed has not been great. The poison does not multiply in the circulation nor is the blood infectious. Sapremia often occurs in the case of a septic wound where death of tissue has occurred.

Symptoms.—The chief symptoms are an elevation of temperature within thirty-six hours after an accident or operation, sometimes preceded by a chill or rigor. The elevated temperature, which, as a rule, follows the infliction of all wounds and in case of aseptic wounds soon subsides, continues in these cases to rise. The wound becomes painful and the surrounding tissues red and swollen. Other febrile symptoms are present.

The *treatment* usually consists in making an opening at some point in the wound and allowing the fluid (pus or serum and blood) to ooze out. A stitch abscess may be the cause of the trouble. In many of these cases it is necessary to remove some of the lower stitches and insert a drainage tube or gauze. While such wounds are not aseptic, it is quite important to use all possible precaution regarding cleanliness about the wound, as mixed infections are very common, very easily produced, and the conditions may be made much more serious. Hot, moist, antiseptic compresses are frequently used over the wound till inflammation subsides and a promptly acting purgative is given.

Septicemia, or Septic Infection.—Septicemia differs from sapremia in that, while the former occurs as the result of absorption of poisons as a result of putrefaction, septicemia is due to a living poison which gains admission to the blood and multiplies with great rapidity. (Some authorities classify both forms of complication under septicemia and divide the latter into two classes, septic intoxication and septic infection.) The poison may enter through a pin prick and, unlike sapremia, the cause cannot be removed. The poison is not only circulating but multiplying. Supportive treatment is usually employed, and occasionally in the early stages the serum treatment instituted. When the serum has been used early the results have been in many cases quite satisfactory.

For the administration of antitoxin the following general rules should be observed:

Cleanse the skin at point of injection as for an operation.

Disinfect the hands.

Have the syringe sterile.

Inject slowly where the skin is loose and cover the point with collodion. Such injections are usually given by physicians.

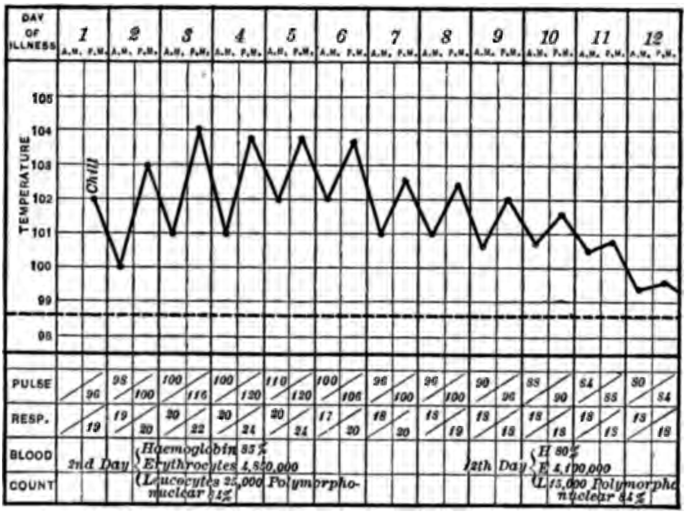


FIG. 99.—Chart of septicemia erysipelas (Keen's Surgery).

General Treatment.—In cases of septicemia it is most important to support the patient's strength by the best possible means, so that he may be able to overcome the toxins. Good whisky or brandy is believed by many physicians to act as an antidote in such toxic conditions and is often given in larger than usual doses.

Pyemia is a septic condition characterized by marked constitutional symptoms and by the formation of abscesses in various parts of the body. It is septicemia plus thrombosis and suppuration. These abscesses may develop in from two to six weeks after the onset of the disease and are found in almost all parts of the body. The lymphatic glands are frequent locations for abscesses, but the liver, spleen, limbs, joints, and the brain are commonly involved.

The *symptoms* resemble those of septicemia, but are more marked. Chills are recurrent; sweating is profuse. Skin eruptions are common [illegible] resembles the condition so frequently found [illegible]oid fever—tongue dry,

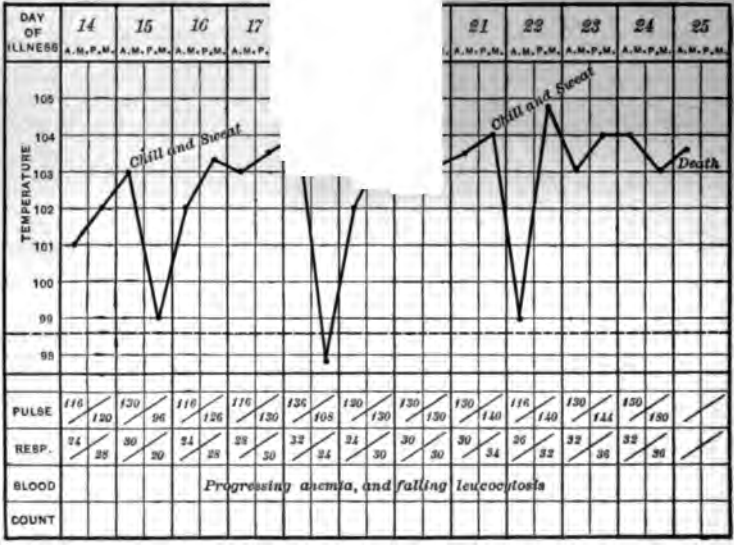


FIG. 100.—Chart of pyemia (Keen's Surgery).

brown, and heavily coated, and sordes accumulates on the teeth and gums.

Treatment.—The local treatment consists in incising and cleansing the abscesses and maintaining drainage.

Constitutional treatment is similar to the measures described for septicemia.

The general treatment of all cases consists of:

Removing the cause of the disease as far as possible by drainage and other means.

Preventing the multiplication of bacteria by the use of antiseptics.

Supporting the patient's strength by all possible means.

The administration of antitoxin.

The *character of the discharge* in these cases will vary with the germs producing it. The staphylococcus, streptococcus, colon bacillus, tuberculosis bacillus, and various other pus-producing germs all produce a different quality of discharge. The most rigid preventive measures are necessary to keep the infection from others.

Erysipelas is an acute inflammation of the skin and subcutaneous tissue "believed to be due to the streptococcus and marked by chill, fever, and intense local redness of the skin and mucous membranes." (Dorland.) Predisposing causes may be depression of the vital forces and the existence of wounds or abrasions. These wounds may be so small as to be invisible to the naked eye.

Spread of Disease.—As a rule, the infected area is sharply defined. Erysipelas has been acquired by contact with puerperal fever, and may easily be communicated to parturient women, though such cases are now fortunately rare. Recently operated patients are peculiarly susceptible. Osler says, "The infection can be carried by a third person. The poison certainly attaches itself to the furniture, bedding, and walls of the rooms in which patients have been confined."

The *incubation period* is short, usually from twenty-four to forty-eight hours, but may extend over several days.

The *onset of the disease* is frequently marked by a chill and vomiting. The temperature rises rapidly and local signs soon appear. Swelling and other signs of inflammation of the skin are prominent. The affected part around the wound has a dark-red rash, which spreads, and a burning pain is complained of. Such cases usually subside rather abruptly; the temperature falls by crisis and the rash fades. A week to ten days is the average duration. The disease is self-limited and medicines have had but little control over the course of the disease. In the worst cases abscesses sometimes occur.

Management.—Isolation is the first step. Dressings should be immediately burned and the strictest precaution against the spread of the disease observed. Local treatment includes the use of tincture of iodin, ichthyol, and other antiseptics. Tincture of iron in large doses is frequently given as a supporting tonic. Concentrated liquid foods are given as in other fevers. The use of sulphate of magnesia in erysipelas has given very satisfactor[illegible]ent years and is highly recommended by som[illegible]s. A saturated solution of Epsom salts is mad[illegible] are wrung out of it and applied every hour or [illegible] that marked and speedy cures have followed t[illegible]ment. It has also been successfully used in o[illegible]mations and in burns.

Complications.—All [illegible] nearly always present, especially in patients [illegible]fe. Endocarditis, pneumonia, and septicemia [illegible]cur.

Predisposition.—Chronic alcoholism, debility, and Bright's disease are predisposing causes. A family predisposition is sometimes seen. Certain persons seem unusually susceptible to the disease and have repeated attacks.

Tetanus, otherwise known as lockjaw, is a communicable disease produced by inoculation with the tetanus bacillus and marked by tonic spasm of the lower jaw, with distinct exacerbations. Anti-tetanic serum is now frequently given hypodermically in the early stages and has met with much favor in medical circles. It is believed that its use affords the best chance of recovery that is now known.

The *incubation period* varies from a few hours to a couple of weeks, but the disease usually manifests itself within ten days.

"It can be taken as a working rule that if the spasms of the muscles start within four days of infection the termination is invariably fatal." (Howard.)

The *tetanus bacillus* flourishes in garden soil and around stables. It frequently accompanies wounds made with toy pistols or other explosives. It is perhaps the most virulent poison known.

In *nursing* these cases isolation, absolute quietness, darkness, or a dim light are important points to be observed. Care should be used to avoid jarring the bed or sudden startling sounds. Feeding is often difficult on account of the muscular spasms of the mouth and throat. Nutrient enemata or feeding through the nose may be necessary. Spasms are sometimes controlled by chloroform repeated at intervals. The germs flourish at the side of the wound. Dressings should be burned on removal and careful disinfection of bedding, etc., practised.

The tetanus germ produces spores, which "have a very high degree of resistance to heat, germicidal agents, and external influences." The infectious agent is contained in the pus and discharges from the wound.

Rabies, otherwise known as hydrophobia, is due to a poison introduced into the system by the saliva of a rabid animal usually a dog. When the bite occurs on a part of the skin protected by clothing the danger of contracting the disease is greatly decreased, as the clothing tends to protect the skin from the saliva. The incubation period is from six weeks to three months. The chief symptoms are depression and irritability, followed by great excitability and excessive sensitiveness of the afferent nerves, giving rise to painful spasms, particularly of the oral and laryngeal muscles. There is usually some rise of temperature and later quiet and coma, ending in death in many cases.

Pasteur's treatment consists in the gradual acclimatization of the patient to the poison by the injection of graduated doses of the poison procured from the spinal cord of infected rabbits.

Precaution.—In almost all of these diseases antiseptics are employed, and it is well for the nurse to remember that there is a danger of poisoning by absorption of the antiseptics.

Iodoform poisoning sometimes occurs and is very often fatal, especially in children or anemic or debilitated patients. The local symptoms may be eczema, with intense itching and burning.

In carbolic acid poisoning the urine changes to an olive-green or nearly black color, and there is vomiting, dizziness, and headache.

In corrosive sublimate poisoning the local symptoms may be eczema, itching, burning. There is a copious secretion of saliva with general symptoms, such as headache, nausea, etc.

In all such cases the drug should be at once stopped and the physician immediately notified. Some persons can absorb large quantities of iodoform without injury. Others are peculiarly susceptible to the influence of the drug.

[illegible] XXVI

FRACT[illegible]AD INJURIES

A FRACTURE is a [illegible]inuity of bone or a separation of bone into tv[illegible]es as a result of violence.

Causes of fractu[illegible]edisposing and immediate. Predisposing causes [illegible]s, syphilis, or tuberculosis. The bones of aged pe[illegible] a large proportion of mineral matter, are more easily fractured, and union is more difficult. Immediate causes are direct or indirect violence or muscular contraction.

Symptoms may be objective, as abnormal mobility in the bone between joints, crepitation, and deformity; subjective, as pain, disturbed function, and paralysis; and constitutional, as rise of temperature and shock.

Varieties.—Incomplete (green stick), in which the bone is partially bent and partially broken. These are found only in children and usually only where rickets exist.

Simple, in which the bone is broken, but there is no external wound.

Compound, in which the fracture is accompanied by wounds of the soft parts.

Multiple, in which more than one fracture has taken place.

Comminuted, in which the bone is broken into many pieces at the point of fracture.

Complicated, in which, besides the fracture, there is severe injury to nerves, blood-vessels, and other tissues.

Impacted, in which one end of the bone is driven into another.

There are various other classes of fractures, but the distinction between them is of no special importance to nurses.

Treatment.—Three important principles of treatment should be observed in attempting to render first aid in case of fracture.

1. Avoid making a simple fracture compound.
2. Give the patient as little pain as possible.

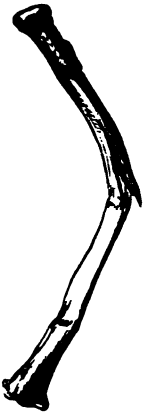


Fig. 101.—Partial or green-stick fracture of the radius (Stimson).

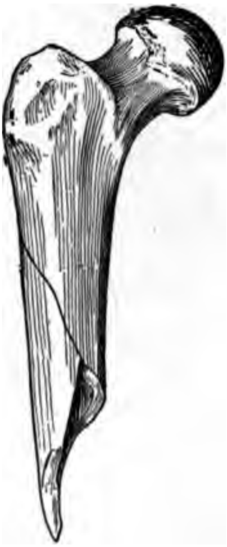


Fig. 102.—Spiral fracture of the femur (Warren Museum, specimen 1103).

3. In case of compound fractures observe the rules of surgical cleanliness as far as possible.

General treatment includes rest and support for the injured part by the use of splints, reposition of the fragments, good food, and hygienic surroundings, with perhaps in the later stages massage and passive movements.

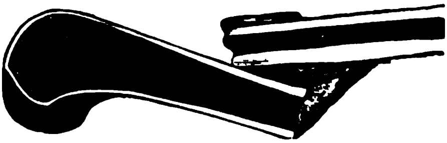


Fig. 103.—Transverse fracture of the femur (Gurlt).

The *bed* in cases of fracture of the lower extremities should

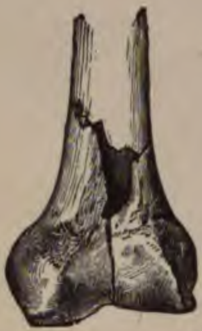


FIG. 104.—Intercondyloid fracture of the femur (Bryant).

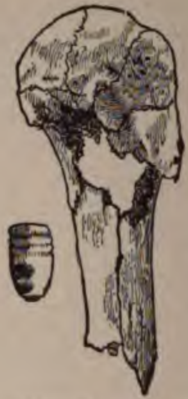


FIG. 105.—Comminuted perforating gunshot fracture of the head of the humerus (Army Med. Mus.).

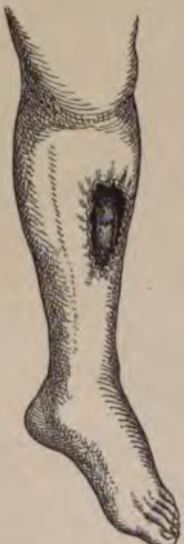


FIG. 106.—Compound fracture (Am. Illus. Med. Dic.).

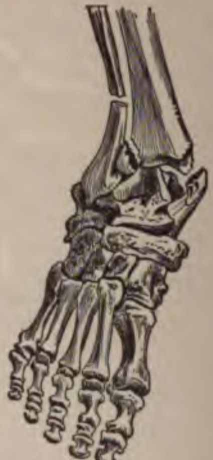


FIG. 107.—Pott's fracture (Hoffa).

be kept firm and level by placing boards beneath the mattress. Special wire mattresses for fractures can be secured. These have a rigid bottom, with cross-bars of steel angle, and steel bands running lengthwise, and flat bar for fracture attachments.

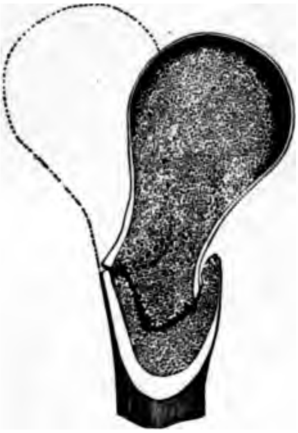


Fig. 108.—Impacted fracture of base of neck of the femur (Bigelow).

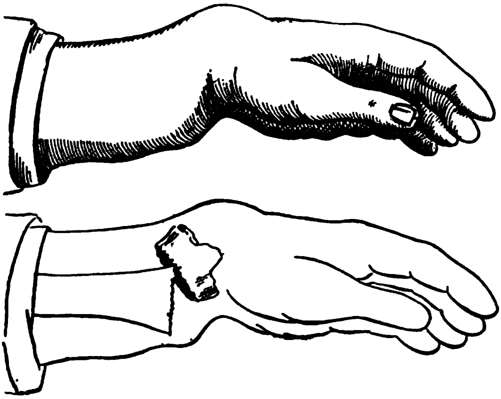


Fig. 109.—Colles's fracture, showing characteristic deformity (silver-fork deformity) at the wrist, due to backward displacement of the lower fragment (Levis).

In undressing fracture patients the clothing should be removed first from the uninjured limb, and in many cases it may be necessary to cut the clothing along the seams, which will admit of ready repairs. The temporary splint, as a rule, is removed by the physicians, and it is rare that a nurse will have to do more than assist.

A bed-cradle may b[illegible]tect against the weight of bedclothes in case [illegible] and sand-bags to keep the limb in position.

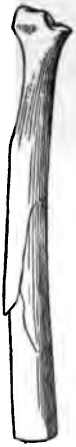


FIG. 110.—Partial fracture of the ulna; T-shaped line of fracture (Warren Museum, 3722).

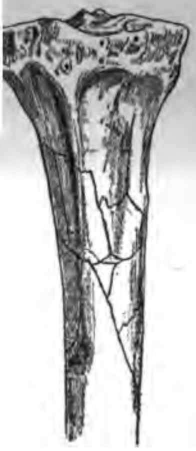


FIG. 111.—Comminuted fracture of the tibia (Int. Text-book of Surgery).

The *extension apparatus* consists of two bands of adhesive plaster connected by a piece of board, in the center of which is an opening. The straps are applied on each side of the leg. The piece of wood is a little distance from the foot. The adhesive straps are firmly held to the limb by cross-straps. A cord passes through the piece of board and over a pulley fixed to the foot of the bed. A weight is attached to the other end of the cord (Fig. 112).

The weight may be of sand-bags or shot or specially designed weight, but the amount of weight is determined by the physician in charge, and should not be changed or removed except as he directs.

"During the nursing of a case of fracture with extension three things should be carefully noted:

"1. That the weight is pulling in the line of the fractured bone.

"2. That the weight is not resting against anything or touching the floor.

"3. That the patient's foot or the splint is not resting against the end of the bed."[1]

Carelessness about these points or displacement of the apparatus for holding the leg in position may mean displacement of the bone, deformity, and shortening. A Bradford frame is exceedingly helpful in managing children and heavy patients.

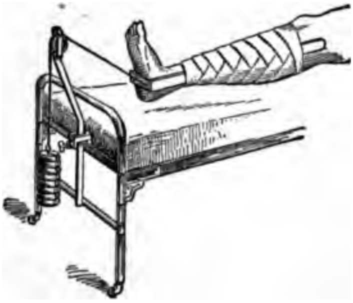


FIG. 112.—Extension apparatus (Da Costa).

Union of fractures varies in the time required, but is usually from three or four weeks to twelve weeks. The periosteum is the important agent in the repair of fractures.

A *Colles fracture* is a fracture of the lower end of the radius. It is common in elderly people, and frequently occurs from a fall on the outstretched hand.

Fracture of the Spine.—Such patients require a firm fracture-bed, as already described, and, in addition, an air- or water-bed. In case of water-beds refilling at intervals becomes necessary. With such patients four persons are necessary for lifting, one each at the head and foot and two to support the patient near the seat of injury. In all such cases four causes of death are to be feared—asphyxia, shock, bed-sores, and urinary complications, all of which require special treatment.

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[1] Russell Howard in "Surgical Nursing."

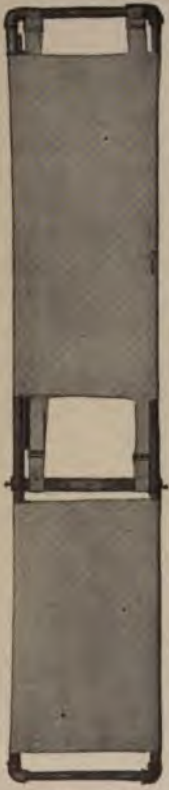

FIG. 113.—Bradford frame (Bradford and Lovett).

Dislocations are displacements of any part. The term is commonly used to designate the separation of joint surfaces. There are a number of kinds of dislocation, as, for instance, complete, partial, compound, complicated, simple-traumatic, etc.

The causes may be congenital. Children are sometimes born with abnormal articulation of the hip-joint. Prolonged inflammation may cause dislocation. Direct violence is the usual cause.

The ligaments which bind bones together at joints and protect and strengthen the articulations are stretched and sometimes torn. The nursing treatment usually consists in keeping the patient as comfortable as possible and in applying hot or cold compresses to the part.

HEAD INJURIES

The most common head injuries with which a nurse will have to deal are concussion of the brain and compression.

Concussion of the brain is a condition caused by violent blows on the skull, accompanied by dizziness, loss of consciousness, nausea, weak pulse, and low respiration. The temperature may be subnormal. This condition may last from a few moments to days or weeks. A feeble mental condition occasionally results.

After the stage of shock has passed and reaction has begun, vomiting usually occurs—a favorable symptom in such cases. There is also a rise in temperature, headache, irritability, and intolerance of light or noise. The headache may continue till convalescence has begun. Inability to remember or to concentrate the mind is common in these cases and convulsions frequently occur. Until reaction takes place the head is usually kept low. Ice-bags or coils are used after reaction has begun. If the coma is long continued rectal or nasal feeding may be necessary.

As these cases are the result of accident or violence, it is important to save the first vomited matter for the physician's inspection. In case of legal action it is often important to know whether or not the stomach contained alcohol. No stimulants should be given in such cases except on a physician's order.

Cerebral compression may follow concussion without consciousness having been regained or may occur after an apparent recovery. It is commonly caused by the rupture of a blood-vessel. The coma becomes more and more marked, the pulse is full and bounding, and the breathing stertorous, characterized by a deep, snoring sound. The pupils are unequal in size and later become widely dilated. The temperature may differ on the two sides of the body. Spasmodic or convulsive movements or rigidity of the limbs on one side are not unusual. All these symptoms are important to be noted and the change from concussion to compression watched for. This condition usually requires immediate operative treatment.

Trephining, the removal of a piece of bone from the skull, is the operation performed in these cases. In the nursing of these patients it is important to avoid noise, light, stimulants, and excitement of all kinds. Prolonged cerebral irritation not infrequently follows compression. The urine in all cases of coma should be tested for albumin and sugar.

BANDAGES

Bandages are important aids in the management of fractures, and attention may again be called to the practice of bandaging, though lessons on it may have been given earlier in the course.

Uses of Bandages.—1. To retain dressings or splints in position.

2. To support injured parts.

3. To make even, steady pressure on a part.
4. To check hemorrhage.
5. To protect wounded parts from exposure.

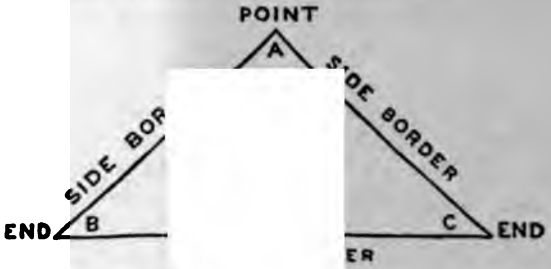

FIG. 114.—Trian rwick and Tunstall).

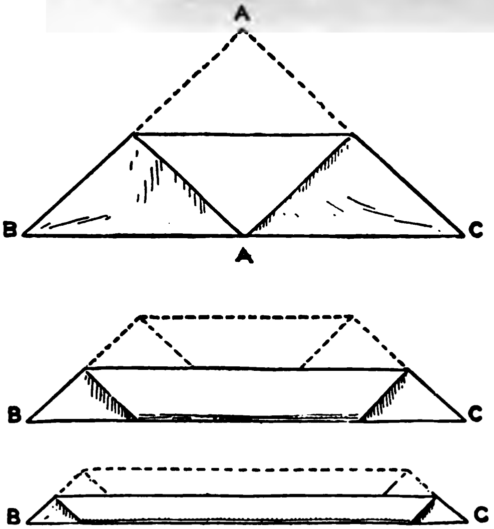

FIG. 115.—Method of folding triangular bandage, broad and narrow for use (Warwick and Tunstall).

The **triangular bandage** is made by taking a piece of cotton about 1 yard square, folding it diagonally, and cutting it along the fold. Each of the triangles thus secured forms one bandage.

The base of the triangle forms the lower border; the two sides, the side borders; the apex, the point; the remaining corners of the triangle, the two ends.

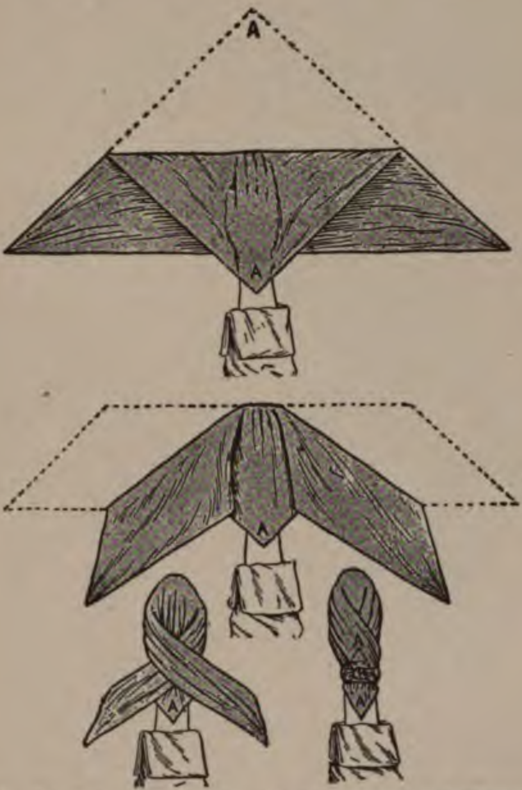

Fig. 116.—The triangular bandage for the whole hand (Warwick and Tunstall).

The triangular bandage has the following advantages:[1] "It can easily be made from a handkerchief and is, therefore, well suited for an emergency bandage. Its application may be easily acquired; temporary dressings may be fixed better with it than with a roller bandage, and it can be used for almost every purpose for which a bandage is required.

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[1] "First Aid to the Injured," Warwick and Tunstall.

"*The Narrow Arm Sling.*—This is applied by first folding the bandage narrow, then placing one end over the shoulder of the uninjured side and allowing the other end to hang down in front. The forearm is now bent to the required height, and the hanging end is drawn up in front of it and over the shoulder of the injured side, and the two ends are then tied behind the neck.

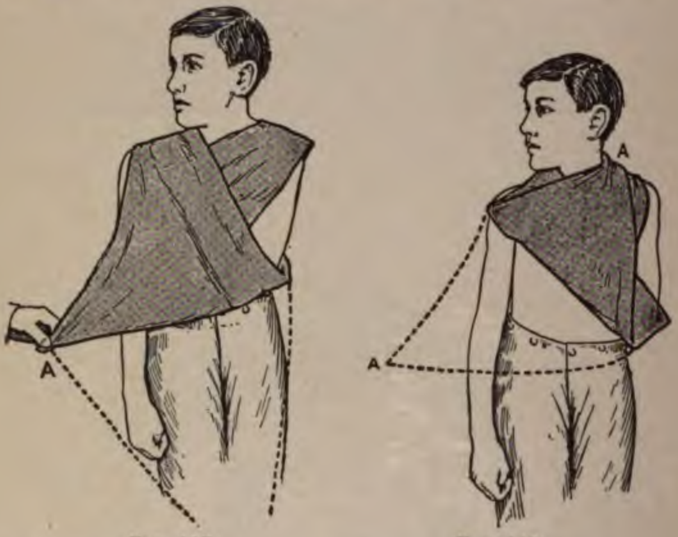

FIG. 117. FIG. 118.

FIGS. 117, 118.—The large arm sling applied as a support for the elbow (Warwick and Tunstall).

"*As a Support for the Elbow.*—Place the triangular bandage with one end on the shoulder of the injured side and the apex pointing in the opposite direction to the elbow; then flex the forearm on the injured side, and place it across the front of the chest, with the fingers touching the opposite shoulder. Now draw the lower end over the elbow and across the front of the chest to the top of the shoulder on the uninjured side, and tie it to the upper end. Then take the apex, fold it well over the forearm, and pin it to the bandage above on the injured side.

"*For a Wound of the Scalp.*—First fold the lower border of the bandage lengthwise to form a hem 1½ inches wide, then place it with the middle of the hem over the center of the forehead just above the root of the nose, and the point hanging over the back of the head to the neck. Now carry the two ends backward above the ears, which are left out, cross the ends behind at the nape of the neck over the point; bring the ends forward and tie them in front of the forehead. Next draw the point down to make the bandage fit well over the head, then turn it over the top of the head and pin it.

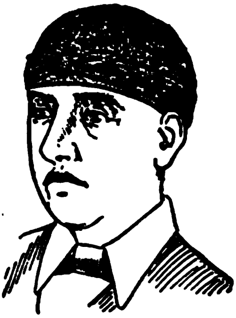

Fig. 119.—The triangular bandage for the head (Warwick and Tunstall).

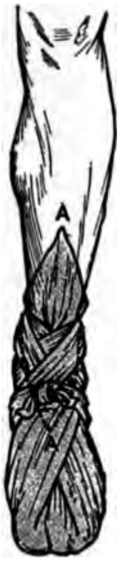

Fig. 120.—The triangular bandage for the foot (Warwick and Tunstall).

"*For a Wound of the Hand.*—Spread out a bandage unfolded, place the hand upon it with the wrist on the center of the lower border, palm downward, and the fingers toward the point. Turn the point over the fingers and carry it across to the back of the wrist, then draw the bandage downward on each side of the hand, and pass the ends upward round the back of the wrist;

cross them over the point, then carry them in front of the wrist; bring then back again, and tie them over the point. Now draw the point over the knot and pin it to the bandage below.

"*For a Wound of the Foot.*—Spread out a triangular bandage unfolded; place the foot on the center of it with the toes toward the point, draw the point upward over the instep. Take one of the ends in each hand close up to the foot, bring them forward round the ankle to the front and over the point, cross them on the instep, carry the ends back round the ankle, cross them behind, catching the lower border of the bandage, bring them forward again and tie in front of the ankle. Now draw the point well over the knot and pin it to the bandage below."

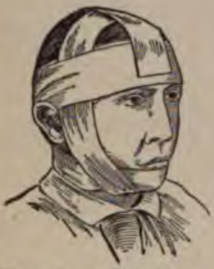
Fig. 121.—Gibson's bandage (DaCosta).

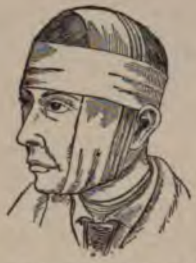
Fig. 122.—Crossed bandage of the angle of the jaw (DaCosta).

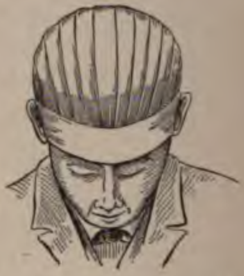
Fig. 123.—Recurrent bandage of the head (DaCosta).

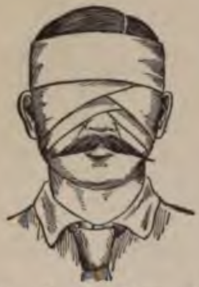
Fig. 124.—Crossed figure-of-8 bandage of both eyes (DaCosta).

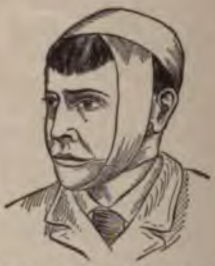
Fig. 125.—Barton's bandage, or figure-of-8 of the jaw (DaCosta).

The roller-bandage is the one that admits of the most varied service, and a good deal of practice can profitably be given to the different methods of applying that one kind of bandage. Any untrained person can manage almost any other bandage reasonably well if they have seen it applied once, but the proper application of the roller-bandage requires skill that is only acquired by practice.

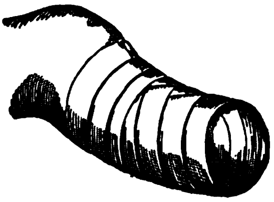
Fig. 126.—Recurrent bandage of a stump (DaCosta).

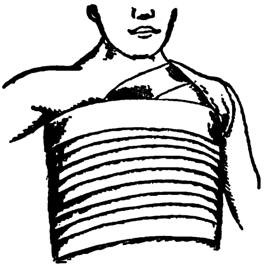
Fig. 127.—Desault's bandage, first roller (DaCosta).

A properly applied bandage will be comfortable to the patient and neat looking.

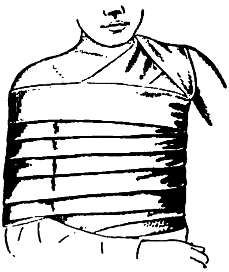
Fig. 128.—Desault's bandage, second roller (DaCosta).

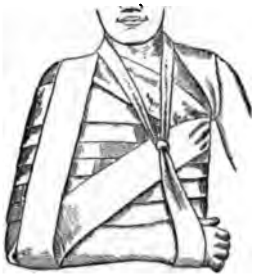
Fig. 129.—Desault's bandage, third roller (DaCosta).

The spiral, spiral reverse, the figure-of-eight, and the spica are methods of applying roller-bandages with which all nurses should be familiar.

The *parts* of a bandage are the initial or free end, the terminal end, and the body.

Rules.—The following rules for bandaging will perhaps be helpful even to those who have already acquired some degree of proficiency in the art:

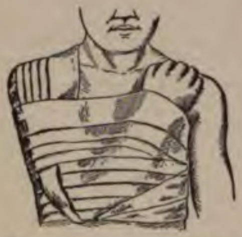

FIG. 130.—Velpeau's bandage (DaCosta).

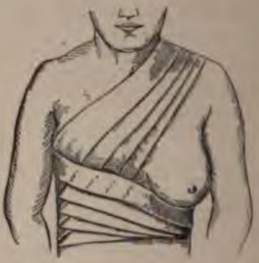

FIG. 131.—Figure-of-8 bandage of the breast (DaCosta).

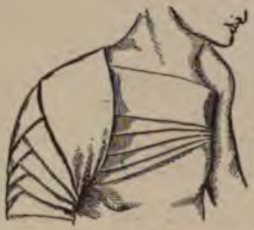

FIG. 132.—Spica of the shoulder (DaCosta).

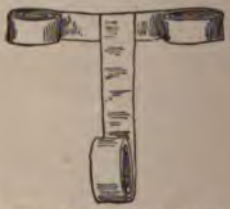

FIG. 133.—T-bandage (Stoney).

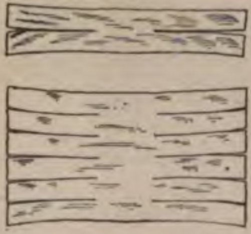

FIG. 134.—Four-tailed and many-tailed bandages (Stoney).

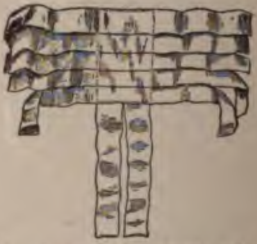

FIG. 135.—Scultetus bandage (Stoney).

1. Have the bandage tightly rolled before applying. Study to apply smoothly, and never attempt to reapply a bandage without first winding it up.

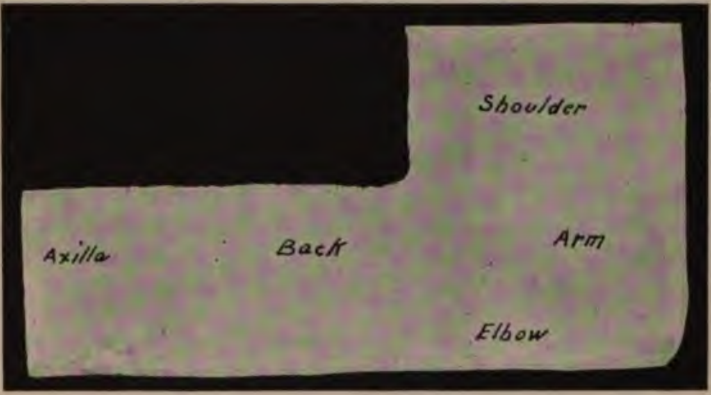

FIG. 136.—Newman's right-angle binder.

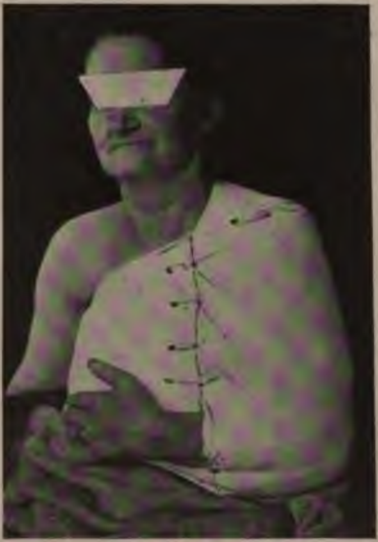

FIG. 137.—Newman's right-angle binder in position.

2. The limb to be bandaged should be held in the position in which it is to be kept, with the bandager standing in front. An arm should be held with the elbow flexed and thumb pointing upward.

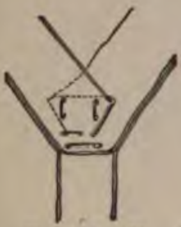

FIG. 138.—Y-bandage.

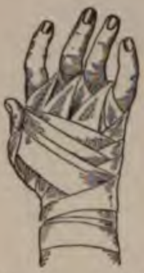

FIG. 139.—Demi-gauntlet bandage (DaCosta).

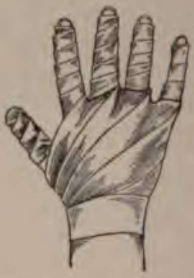

FIG. 140.—Gauntlet bandage (DaCosta).

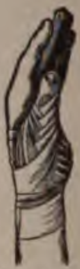

FIG. 141.—Spica of the thumb(DaCosta).

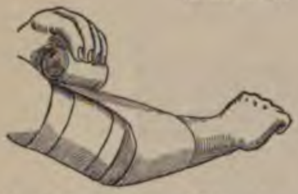

FIG. 142.—Figure-of-8 bandage of the elbow (DaCosta).

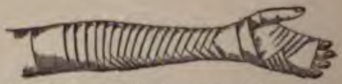

FIG. 143.—Spiral reversed bandage of the upper extremity (DaCosta).

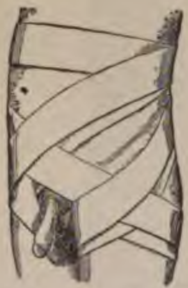

FIG. 144.—Spica of the groin (DaCosta).

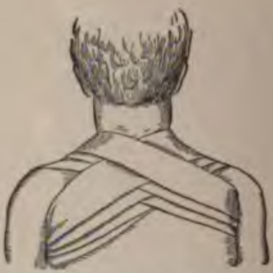

FIG. 145.—Posterior figure-of-8 of both shoulders (DaCosta).

3. Apply the outside of the bandage to the inside of the limb and fix the end by a couple of turns around the limb in starting.

4. Bandage from below upward and from within outward over the front of a limb.

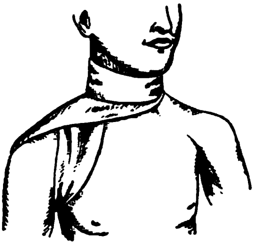

Fig. 146.—Figure-of-8 of neck and axilla (DaCosta).

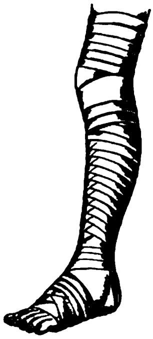

Fig. 147.—Spiral reversed bandage of the lower extremity (DaCosta).

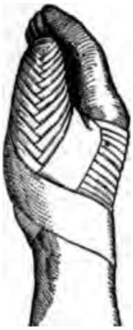

Fig. 148.—Selva's thumb-bandage.

5. Allow each turn of the bandage to overlap by about two-thirds the preceding turn, and never unroll more than 2 or 3 inches of the bandage at a time.

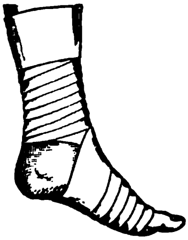

Fig. 149.—Figure-of-8 bandage of the instep (DaCosta).

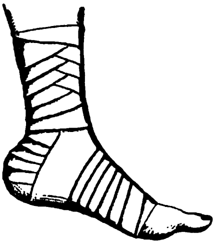

Fig. 150.—Spica of the instep (DaCosta).

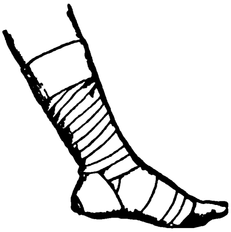

Fig. 151.—Method of covering the heel (DaCosta).

6. Apply the bandage firmly, but never too tightly nor too loosely. The bandage is too loose if the edges turn up on running the hand down over it after the bandage is on.

7. Endeavor to use firm, equal pressure. The presence of

red lines on the surface of the skin after removal of a bandage indicates unequal pressure.

8. Leave the tips of fingers and toes uncovered. If these become blue the bandage should be loosened.

9. Never apply a bandage wet. When dry it will shrink and be too tight.

10. Avoid reversing bony prominence, and keep the reverses in a l side of the limb.

11. In bandaging a a figure-of-eight.

12. In removing a up the loose part and carry it around the lir

C VII

NURSING IN ORTHOPEDIC DISEASES

Orthopedic *surgery* is defined as "that department of general medicine and surgery which has to do with the prevention and correction of deformities. The term "orthopedic" is derived from two Greek words, meaning "to train straight." It is of the utmost importance that the orthopedic surgeon have the intelligent coöperation of the nurse in charge of the patient. No class of patients require such close and careful attention for so long a period of time as those afflicted with a disease of the spine, hip, or knee. Even intelligent parents get tired of carrying out the doctor's instructions, day after day through months or years, when they see so little progress being made. It is difficult for them to realize that most orthopedic affections are of very slow nature, and the best results are only obtained by patient, untiring adherence to the directions regarding the treatment. But there is no line of surgery that gives greater results as a reward for faithful work. The recuperative powers of children are wonderful, and results in this line of work are achieved to-day that are truly marvelous.

Physicians and surgeons especially interested in this branch of medical science are pleading for an early recognition of conditions and diseases which result in deformity so that preventive treatment may be begun as early as possible.

Deformities are usually acquired while young when bones are soft and yielding. As age advances the bones harden and deformities are perpetuated.

Causes.—"The principal causes are:

1. "Unnatural softness of bones due to rickets.

2. "Habitual faulty position from daily occupation, fatigue of the back muscles, general weakness, defective eye-sight, defective hearing, insufficient respiratory exercise.

3. "Tubercular disease of bones and joints.

4. "Paralysis of limbs.

5. "Violent accidents."

Indirect Causes.—Among these the most potent appear to be:

(*a*) Adenoid nasal obstruction, which by reason of defective hearing, poor nutrition, and insufficient respiratory exercise, produces stoop shoulders, flat chest and high narrow palate.

(*b*) Bad school ventilation, ill-sized school furniture, and long school periods, which producing fatigue and faulty positions, also produce flat chests, stoop shoulders and lateral spinal curvature.

(*c*) Rickets, which causes unnaturally soft yielding bones. Rachitic deformities, however, appear before the beginning of school life. A square box-shaped skull, pigeon breast, contracted pelvis, and bow-legs are the most frequent of its resulting deformities.[1] Defective hearing or defective vision is a cause of stoop shoulders because the child leans forward constantly to hear or to see. The flat chested, stoop-shouldered child starts out with a decided handicap not only because a flat chest means a poor air supply and a consequent lessened nutrition. It detracts from the forceful personal appearance of the individual also, and is a factor which hinders his financial success.

Early Symptoms.—"The high hip or shoulder, the prominent shoulder-blade, the slight, intermittent limp; the dragging foot, the waddling gait, the falling gait, the enlarged wrists, the unwonted inclination to rest while at play, the frequent desire to lean against some support, as the nurse's lap or the seat of a chair; the habit of resting the head in the hands with the elbows propped up; the inclination to stand with the abdomen protruding, or upon one leg; the irritable disposition; the complaint of thoracic, abdominal or other pain, which is persistent and unaccounted for; the sudden starting and crying during sleep, any one of these may be among the earliest evidences of a condition or disease which if disregarded will result in producing a deformity."[1]

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[1] M. S. Cornell, M. D., in "Health and Medical Inspection of School Children."

Flat-foot "is a giving s of the foot and a resultant shifting of the wei l from directly over the arches to any point int

A *weak foot* is usua flat-foot, and an early diagnosis is of the great for if the incipient stage is recognized the dev at-foot can usually be prevented.

Weak and painful fee rsons of weak muscular development whose occupations necessitate a greater strain on the muscles and ligaments that support the arch of the foot than they are able to stand. Nurses are particularly prone to this affection. The foot is unable to stand the strain of the body weight. This condition not infrequently follows an ordinary sprained ankle in which the ligaments and tendons of the feet have become unduly stretched.

The *treatment* for this condition consists in giving mechanic support to the arch of the foot till the weak structures of the foot are restored to their normal conditions. Dr. A. R. Shands gives the following directions for dealing with weak feet, which he says any well-trained nurse can carry out:

"If the foot is very painful it should be strapped with strips of adhesive plaster. There are many ways of applying the strips of plaster, but all have the same object in view—the support of the foot. Begin the first strip at the outer posterior aspect of the heel and bring it spirally across the back of the foot and end it at the base of the second toe. The second strip is begun at the same place and is brought around the inner aspect of the foot and across the back to the point where the first strip stopped. This process is repeated, overlapping each strip about one-third of its width, alternating the inner and outer strip until the whole foot is enclosed, extending it well over the ankle bones. The strips that extend over the arch of the foot should be carried well around the foot and stopped on the upper border of both the inner and outer side of the foot. The strips should not be wider than three-quarters of an inch; the narrower they are the smoother they will adjust themselves to the foot. After this dressing is completed a soft pad of gauze should be put in the arch of the foot, so as to fill the entire arch. This causes the weight in locomotion to be equally distributed over the entire posterior surface of the foot from the heel to the ball of the foot. This dressing should be continued about two months, as a rule, renewing it about every ten days; at the end of this time it can be left off and the foot supported with a soft pad attached to an insole. The pad should be thick enough to fill the entire arch."

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[1] J. J. Nutt, M. D. in "Dietetic and Hygienic Gazette."

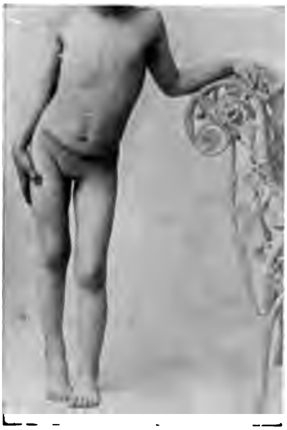

FIG. 152.—Hip-joint disease, showing tilting of the pelvis in abduction and apparent lengthening (left leg) (Moore).

In the severe cases the treatment outlined above will not be sufficient; in these cases some more radical measures will have to be adopted by the orthopedic surgeon.

Badly fitting shoes are named by Lovett among the causes of flat-foot. Other causes are excessive weight, rickets, and a short gastrocnemius muscle.

Symptoms of flat-foot are weakness or pain of varying severity, which may extend up the leg and disappear after a period of rest. In marked cases of long standing the foot and toes are swollen, the veins dilated, and sensitive points are usually discovered.

Massage is recommended by McCurdy in cases of edema of the toes and foot. He also advises that gymnastics be practised to develop muscles that are weak, and mentions as of special value the follo [illegible] Rise on tip toe, throw the heels out and allow [illegible] op, repeating this twice each day up to fatigue [illegible]

Synovitis, inflamma [illegible] novial membrane, may be caused by septic [illegible] berculosis, syphilis, or rheumatism, and often [illegible] thematous disease.

The *treatment* inclu [illegible] erirritation, sometimes drainage or aspiration.

Arthritis.—Inflammation of a joint, may be acute or chronic and may result from a variety of causes. It may result from traumatism, may be of neuropathic origin, may result from rheumatism or gout, from gonorrhea or syphilis or from various other causes. It should not be confused with arthritis deformans, a chronic and slowly progressive disease referred to later.

Hip-joint disease (coxalgia) is a tuberculous inflammation of the hip-joint causing necrosis of the bones of the joint. It is not confined to children, but as a rule it manifests itself between the ages of two and fourteen years. Heredity plays an important part in this disease. Children who enjoy perfect health will suffer no injurious consequences from slight injuries, whereas in children with a predisposition to this affection slight injuries very frequently lead to serious tuberculous diseases of bones and joints.

Symptoms.—Limping, which is more marked in the morning. In the early stages it often passes off as the result of exercise.

Atrophy.

Night cries caused by painful spasms of the muscles. Pain not usually in the joint, but in the knee and below it.

Glandular enlargement.

The deformity consists chiefly in a tilting of the pelvis and a shortening of the diseased limb.

Diseases of Bone.—*Atrophy of bone* is a disease of old age which may occur from various causes.

Hypertrophy of bone may result from increased blood supply due to chronic inflammation. The entire bone may grow much larger than its mate on the opposite side. It may also come as the result of increased functional activity.

There are three common varieties of inflammation of bone—periostitis, osteitis, and myelitis—all of which may be due to injury or infection by bacteria. These varieties may exist in combination in the same patient.

Results of inflammation of bone are abscess, caries, and necrosis.

Caries is ulcerous inflammation of bone.

Necrosis is death of a circumscribed piece of tissue.

Osteomyelitis is inflammation of the marrow of the bone. It may result from any of the pathogenic bacteria or from injury or amputation. The pain in this disease is intense and great care should be used in nursing to avoid jarring and to do nothing that will add to the suffering. In such cases the dead structure and purulent material are removed by surgery.

Sequestrotomy is the term used to designate the operation for removing necrosed bone.

Syphilitic lesions of bones, which may be either hereditary or acquired, make up a considerable proportion of diseases of bones and joints. These require, besides mechanical measures, antisyphilitic treatment.

Joint diseases in the early stages are very frequently mistaken for rheumatism. The bacillus of tuberculosis is the cause of much of the serious bone and joint disease. McCurdy[1] says, "The least suspicion of deformity must not be slightly or flippantly passed with the remark that 'They will grow out of it.' The rule is that they grow into worse deformity. It is not a difficult matter to prevent deformity in bone and joint diseases, but it is a most difficult matter to correct it after cases have been under improper or no treatment until marked distortion exists."

The *treatment* has a twofold object—to cure the patient and prevent distortion of the limb. In this treatment nursing plays an important part. The distortion is due to a reflex spasm of the muscles that control the movement of the hip-joint. The treatment aims to put the joint at rest, which will relieve the pain, and to prevent the deformity. A prominent orthopedic surgeon has said, "It would be well for every nurse who has a case of hip disease in the acute form to thoroughly familiarize herself with the action of every muscle about the hip-joint, for it would [illegible] e to her in carrying out the details of the mech [illegible]"

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[1] "Manual of Orthopedic Surgery."

It is highly import [illegible] patients have the best hygienic surroundings [illegible] e most nourishing food, so as to improve the [illegible] Most of such patients improve markedly ur [illegible] reatment. The seaside treatment for surgical [illegible] being carried on to a limited extent in this co [illegible] s begun a few years ago in the American Seaside Hospital, at Rockaway Beach, New York.

Occupations suited to this class of patients should be studied by the nurse who is entrusted with their care. Of these there is a great variety. It is well to remember that he who has helped to make an invalid child happy has also helped to make him well, for the mind exercises its subtle sway over the body.

Abscesses are common complications of this disorder, and such cases always require operative interference. In all hip-joint cases the appliances are so adjusted as to hold the limb in a straight position, and even during the long suppurative stage the limb needs to be kept straight to prevent deformity. In the suppurative cases there is a great danger of strong adhesions forming. Bony ankylosis is more apt to follow in these cases.

Among the nurse's important duties in a case of this kind are:

1. To aid in every possible way in improving the general condition of the patient and increasing the vital forces so that the disease products may be more readily eliminated.

2. To familiarize herself with the causes of the deformity that is likely to be established. She will then more fully appreciate the importance of carrying out in detail the tedious mechanic treatment which is intended to prevent the deformity.

Arthritis deformans is a chronic inflammation of a joint (or joints) with deformity. It may be confined to one joint or may involve all the joints of the body. The theory that it is of bacterial origin has been advanced and is accepted by many medical writers. It is said that trauma is a common predisposing or exciting cause. It develops most frequently between forty and fifty years of age. Deformities produced by it are varied. Experiments extending over several years show that much may be done to prevent and relieve the deformity and render such patients fairly comfortable.

Treatment is directed first to the general condition, then to the joints. Measures used are search for sources of infection, which includes examination of mouth, teeth, etc., removal of decaying teeth and diseased tonsils, frequent urine examination, and careful attention to digestive tract. An enema about every second day as a routine measure has seemed to relieve greatly the joint pains.

Milk, cheese, and buttermilk are given freely in addition to other foods. Patients are kept out of doors as much as possible. Steam baths three times a week, followed by spinal douching, massage, light baths, and systematic exercise, are the chief measures included in the careful routine treatment of these cases.

Pott's disease, so-called for the surgeon who first accurately described it, also called angular curvature, or spinal caries, is a destructive disease, resulting in ulceration and death of certain cartilaginous parts of the spinal column. The deformity arises from a loss of substance in the front part of the column, the hump or curvature resulting from the column bending on itself. In children it frequently occurs as a result of scrofula, or may follow any debilitating disease, or as the result of accident or violence. There is usually a tenderness found when passing the fingers over the spine and pain on movement. If the trouble is located in the cervical region the child may be seen supporting the head with the hands. If the affection is in the dorsal or lumbar portion of the spine the child moves cautiously in standing, sitting, or stooping. In about nine months the characteristic hump is seen. Spinal abscess and paralysis may result or the disease may be arrested. In the management of these cases it is important to secure rest for the spine and suitable support. The best support is a plaster-of-Paris jacket, which should be made to lace in front, so that nothing can interfere with the bath and change of clothing and hinder breathing exercises. Braces are believed by some of the best orthopedic surgeons to be useless in preventing deformity in tubercular diseases of the spine. They at the same time unhesitatingly claim that deformity from Pott's disease under present-day methods of treatment should seldom if ever be permitted. The proper adjustment of the plaster-of-Paris support will prevent it if the treatment is undertaken in time. General hygienic care and liberal diet, with the use of cod-liver oil, lime, and iron in suitable forms, are necessary for the best results.

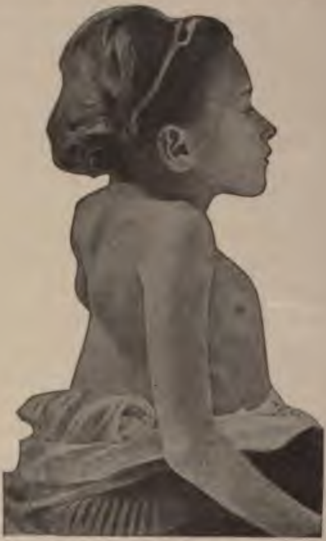

Fig. 153.—Pott's disease of the upper dorsal vertebræ. Sharp-angled kyphosis (clinic of von Ranke-Herzog, Munich).

Lateral curvature of the spine (scoliosis) is a twist or curve of the spine to the side and is often the result of rickets. It is the most frequent of all orthopedic affections. Ninety-five per cent. of all cases are said to begin before the tenth year.

It is slow in development and passes through three stages if not arrested. Permanent deformity may not result till about the eighteenth year.

Among the causes mentioned are rickets, atelectasis, rheumatism, arthritis deformans, and faulty position at school or at work. Improperly made school-desks, which require pupils to twist the body in writing, and the "carrying of the baby" by young children, which causes a tilting of the spine, are fruitful causes. It may also be congenital or caused by injury. A predisposition to it may be inherited.

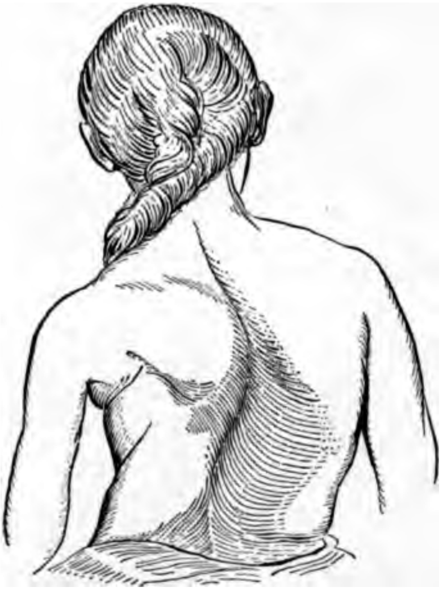

FIG. 154.—Lateral curvature of the spine (Griffith).

The *treatment* aims to correct existing deformity, to prevent progression of the deformity, and to maintain the correction. The general condition of the patient must be improved by all possible means. Gymnastic exercises are considered of great importance. The exercises differ in the different stages, and most orthopedic surgeons evolve a system of their own or

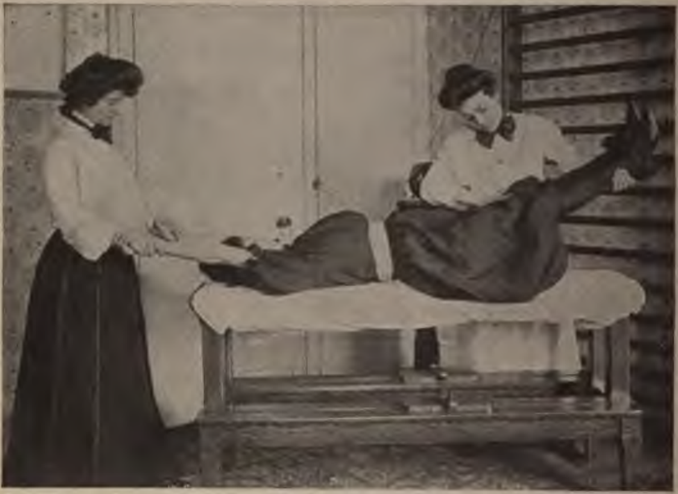

FIG. 155.—Corrective gymnastics in lateral curvature of the spine. Stretch-lying, legs lifting (Max. J. Walter, M. D.).

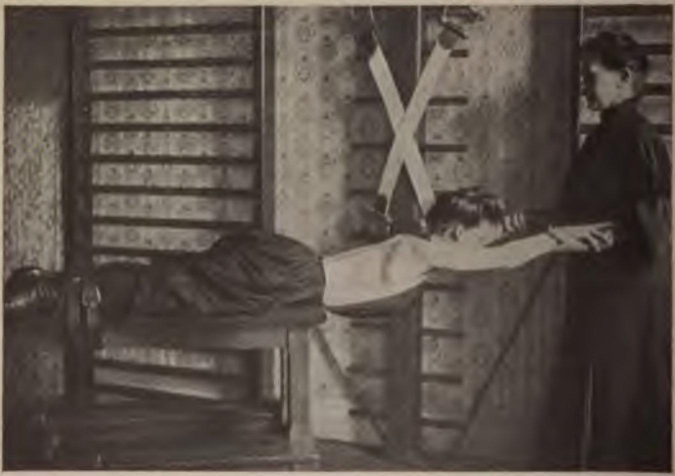

FIG. 156.—Corrective gymnastics in lateral curvature of the spine. Stretch-lying, flexion and extension of arms, with resistance (Max. J. Walter, M. D.).

modify the methods of others to suit individual cases. All such cases need to be trained in the use of proper exercises for daily practice, while special exercises are prescribed to be given at stated intervals. [1]"Muscles can only be developed by persistent and, indeed, hourly practice. This practice should be carried to the point of fatigue through the stages of soreness." Self-suspension by an ordinary suspension apparatus and a pulley fastened to the ceiling is recommended as a useful exercise in straightening the spinal column. Proper methods

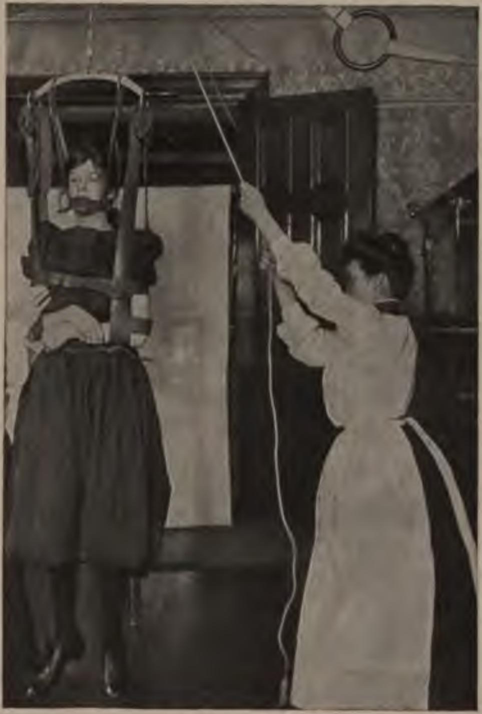

FIG. 157.—Corrective gymnastics in lateral curvature of the spine. the use of the extension apparatus for stretching the spine (Max. J; Walter, M. D.).

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[1] McCurdy, in "Manual of Orthopedic Surgery."

of walking, of maintaining the erect position when sitting, proper methods of breathing and lying in bed, are all matters of detail to be carefully attended to in this disease.

Torticollis (Wry-neck) is "an affection due to irregular contraction of the muscles twisting the head. It may be congenital or acquired" In the congenital variety myotomy is usually resorted to.

Club-feet (talipes) [illegible] f the foot in any direction from the normal po [illegible] e several varieties. This affection may be con [illegible] ed and heredity is an important factor.

Treatment.—Ortho [illegible] in general agree that the earlier treatment is [illegible] the results. Nurses will have little to do wit [illegible] thods in these cases, yet it is well that they should know the prevailing sentiment regarding the best time for correction and the possibilities that lie in this direction. McCurdy, quoting Dr. De Forest Williard, says:

"1. The first month of life is the period of the greatest growth, and to neglect treatment of club-foot during this time is to permit the bony and soft tissues to become permanently misshapen.

"2. Rectification should be commenced from birth by various simple methods.

"3. Correction can be accomplished by a variety of dressings.

"4. Manipulation is exceedingly important for the production of a flexible foot.

"5. Apparatus should be applied as soon as the foot and leg are in position for its application.

"6. Rectification and manipulation should be continued up to the age when the infant is ready to walk, at which time, if the foot cannot be placed on the sole firmly, operative measures should be instituted."

Hysterical deformities are commonly found. One authority states that four-fifths of the joint diseases in the better classes are functional, hysterical, not real. Among the causes mentioned are general debility, neurasthenia, errors of refraction in children and young people. Uterine and ovarian diseases are frequently associated with these affections in girls. Real disease to some degree is sometimes present, but the symptoms are greatly exaggerated. Children are frequently affected. All forms of deformity are seen in hysterical individuals. Clubfoot in children is a not uncommon hysterical deformity. The knee, hip, and ankle joints are frequently affected and paralysis is a common condition. The local treatment varies with the part affected and mental treatment is of great importance. Massage is of value in many of these cases.

Extension Apparatus.—The same rules should be used in the care of extension apparatus as are mentioned in the previous chapter. When extensions are changed, two nurses will be required—one to hold the limb steady by drawing on the foot, and the other to assist with the bandaging, etc. Stretchers need periodical tightening but as a rule patients on stretchers are not moved from the canvas except by order of the doctor in charge.

Orthopedic Appliances.—With the preparation of many of the special appliances used in correcting deformities the nurse will have very little to do, but with "the orthopedic surgeon's principal stock in trade"—plaster of Paris—she will have much to do. In the management of plaster-of-Paris bandages the nurse can materially assist the orthopedic surgeon or hinder his efforts. Her bungling may easily undo his skilled work.

The best dental or modelling plaster should be secured and kept in tin containers, which are kept (after being opened) sealed with a strip of adhesive plaster.

Plaster-of-Paris bandages may set too quickly or not quickly enough or not set at all, and the materials used and general management of them will decide what the result will be. The crinolin used as a foundation should not have a close mesh. It should be cut in about 5-yard lengths of the widths commonly used. In making, the bandage is laid on the table, the plaster smoothly and evenly rubbed into the meshes, and the plaster rolled up loosely and gradually as the work progresses. After making, each bandage is wrapped in waxed paper and placed in a tin container, which is sealed around the edge with adhesive plaster.

Padding underneath the bandage is necessary. Non-absorbent cotton is a much better material for padding than absorbent cotton. In fact, many orthopedic surgeons refuse to use absorbent cotton, which not only absorbs perspiration and may become sour smelling, but absorbs moisture from the plaster, loses elasticity, and is liable to become matted. Over the cotton a well-fitting cotton or flannel bandage is applied. On the legs a white stocking is sometimes used. For plaster jackets a neatly fitting shirt of stockinet or cotton should be provided. For padding for club-foot, hip, or arm casts the common non-absorbent cotton, secured in place by a bandage, will be sufficient. If the axilla and breasts are to be covered with the plaster bandages the parts should be first washed with soap and water and dusted with talcum powder. For padding these parts soft gauze is often preferred to cotton.

Reinforcement of a plaster dressing is sometimes needed, and for this strips of tin and thin wood are often used.

The *temperature of the water* used will have some influence on the setting of the plaster.

Hot water hastens setting, cold retards it; salt helps in the hardening process, but it is unnecessary with good plaster. Tepid water is most frequently used, and the basin should be deep enough for the bandage to be put in on its end. Only one bandage should be put in at a time as needed.

The *bandage* is ready to apply when bubbling has ceased. It is then lifted up, squeezed gently with a hand over each end, the edges freed from loose threads, the end found and unrolled for a couple of inches, and the bandage handed to the surgeon with the body of the roll upward. A little dry plaster should be at hand to be rubbed in by the surgeon as needed.

When a plaster or starch dressing is to be applied over the groin in children protection from soiling with urine may be afforded by covering the edge with rubber tissue before the last bandage is applied. Till the bandage is firmly set the nurse should see that the patient remains in the proper position. Before applying the plaster dressing, and also when it is removed, the floor and furnishings adjacent should be protected by newspapers or more durable material kept for that purpose.

In the application of the plaster dressings there is a danger of the bandage being too tight and impedin [illegible] tion, and the toes and fingers should be watched for signs of swelling or discoloration owing to obstruction to circulation.

The water and remains of the plaster should not be thrown carelessly into the sink or basin to clog the drain pipes, and if there is much plaster on the hands the preliminary cleansing should be done in a portable basin for the same reason.

CHAPTER XXVIII

DISEASES OF THE EYE

THE most important of the special senses and at the same time the most delicate of all the organs of the body is the eye. Not only may defects and disease of the eye result in a loss of vision but such defects lead to numerous secondary evils—nervous exhaustion, digestive disorder, headache, insomnia, etc.

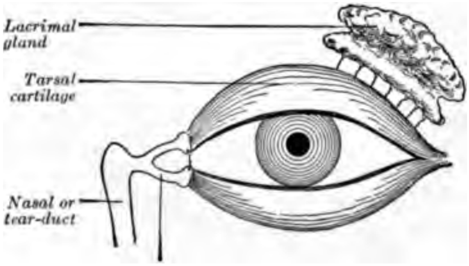

FIG. 158.—Diagram of the lacrimal apparatus. (Tear drainage system of the eye.) (Pyle.)

Before beginning the study of this lesson the nurse should review the anatomy and physiology of the organs concerned. Until a nurse understands something of the structure of the normal eye she cannot have an intelligent understanding regarding these organs when diseased. In studying diseases of the eye it is necessary to keep in mind the functions of the ferent parts of the eye, its several layers or coatings, its blood-vessels and other tissues.

e-ball is made up of three distinct coats or layers.

The outer layer consists of the cornea and the sclerotic coat or sclera, the "white of the eye." The sclera gives form to the eye and protects the delicate structures within. The cornea is a transparent membrane covering the front of the eyeball for about one-sixth of its surface. The cornea has no blood-vessels.

The choroid and iris constitute the second or middle coat of the eyeball. The choroid is the dark brown membrane lying within and close against the sclera. It has a network of blood-vessels. The tissues through which the blood-vessels pass contain numerous pigment cells which provide coloring matter. The choroid coat does not extend over the center of the front of the eye-ball.

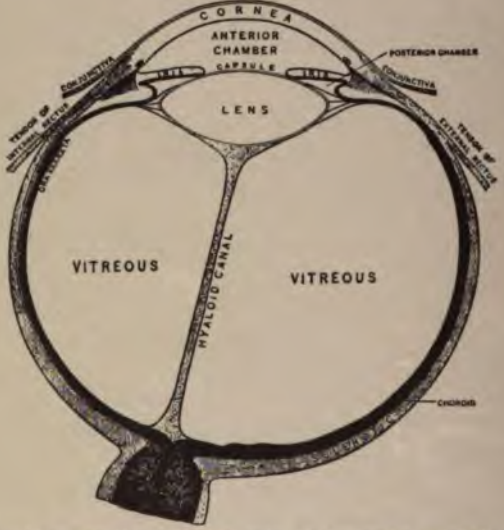

FIG. 159.—Cross-section (horizontal) of the right eyeball (Gerrish, after Testut).

The *choroid coat* is concerned largely with the nutrition of the eye. Another use is to darken the chamber of the eye.

The *iris* is a circular membrane directly back of the cornea. It also contains blood-vessels and the pigment matter which gives the color to the eye. Its center is a circular opening called the pupil. The muscular fibers composing the iris are capable of dilating or contracting, thereby changing the size of the pupil and regulating the amount of light admitted.

The *retina* is the inner coat of the eye. It is the screen on which the images fall, a most complex and delicate structure, which is essential to vision. From the retina the optic nerve passes out to the brain. The optic nerve conveys sensation of light, but not of pain.

The *crystalline lens* is a solid body surrounded by a capsule kept in place by a ligament situated close behind the iris. It is convex in shape and transparent. Its function is to focus the rays of light with the formation of an image on the retina.

The *refracting apparatus* consists of the cornea, aqueous humor, crystalline lens, and vitreous humor. By means of these the rays of light are so manipulated that an image is produced on the retina.

Accommodation is the power which the eye possesses of adjusting itself to vision at different distances. To accomplish this three things are necessary—change in the shape of the lens, narrowing of the pupils, and convergence of the axes of the eyes.

"To accommodate properly both eyes must work together and the axes of both eyes must be directed toward the object.

"Connected with this power of accommodation are the two conditions of near-sightedness or myopia, and far-sightedness or hyperopia."

In myopia the eye is too long, the ball is flattened in a certain way. In hyperopia the eye is too short.

A physiological change takes place in the eye about the period of middle life and as a result of this change the individual sees better at a distance. The term presbyopia is given to this change. "It is dependent on diminution of the power of accommodation from loss of elasticity of the crystalline lens causing the near point of distinct vision to be removed farther from the eye." (Dorland.)

Pyle[1] gives the following conditions as necessary for perfect vision:

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[1] "Personal Hygiene."

"The act of vision is performed in the brain.

"1. The media of the eye must be perfectly transparent.

"2. The rays of light entering the eye-ball must be transmitted through the pupil and focused exactly on the retina.

"3. The retina, optic nerve, and its continuations must be perfect.

"4. The visual centers in the brain must be intact.

"In other words, the receiving, transmitting, and interpreting apparatus must all be perfect. A disturbance of any component of the visual system may cause defective vision and even blindness. In cases of cataract the retina, optic nerve, and brain may be healthy, but the opaque lens behind the pupil prevents the light from reaching the retina. In atrophy of the optic nerve or disease of the retina the media of the eye-balls may be perfectly transparent and properly direct the rays of light to the retina, and the brain may be healthy, but blindness ensues because the impressions either are not received or are not transmitted. In disease of the visual centers of the brain the whole eye-ball may be normal and the optic nerve perfect, but blindness results from the inability of the brain to interpret the impression transmitted to it."

Affections of the eye are numerous, but most of them will come under one of the following heads: eye-strain, and affections of the eyelids, conjunctiva and cornea.

Eye-strain is the most common of the minor affections of the eye. It is a weariness of the eye from abuse or overuse or from some uncorrected defect in the form of the eye. It has been defined as "any defect in the refractive or muscular apparatus of the eye which is serious enough to give rise to symptoms." Refractive errors and poor vision may or may not both be present.

Refraction is the property of bending nearly parallel rays of light from distance, and divergent rays, from close range, so that they meet exactly on the retina.

"*Refractive error* signifies that the eye is not of normal construction, since the rays of light passing through it are not focused properly and exactly on the retina." Refractive error may be either latent or manifest.

Cause of Eye-strain.—"The causes of eye-strain are:

1. "Refractive error in either eye.

2. "Weakness or poor balance of the muscles moving the eye-ball so that the two eyes move together properly only by effort.

"Since in both cases the overwork or weakness with resulting fatigue resides in the muscles, it follows by physiological law that the general health affects the condition of these muscles. A person in robust health with a rather high refractive error, frequently possesses better vision and less discomfort than another with less refractive error, but in poorer general health."

Symptoms are local and general. Local symptoms may be pain and discomfort when using the eyes for near work, blurring of the letters in reading, drowsiness, twitching of the eyelids, smarting and itching of the edges of the lids, redness and "watering" of the eye.

Other symptoms may be headache, nausea, constipation, loss of appetite, indigestion, general nervousness, and possibly insomnia.

The remedy is rest and properly fitting glasses.

Emmetropia means perfect shape of the eye and perfect sight.

Astigmatism is an uneveness in the surface of the eye. The different parts of the eye do not have the same power and the rays of light are not focused on one point.

The chief remedy for these conditions is proper glasses. In some cases of nervous disorder the eyesight fails, and the individual suffers from eye-strain on the least attempt to use the eyes in reading. Such conditions are usually corrected when the nervous system recovers its tone.

The presence of astigmatism is apt to intensify all of the ordinary symptoms of eye-strain and is an especial cause of so many reflex nervous symptoms both about the eyes and head as well as in distant regions of the body."

Strabismus, or cross-eye, is due to weakness of some of the muscles which move the eye, which permit it to be drawn out of its normal position. In the early stages glasses may help this condition, but the most speedy method is by operation. If uncorrected the sight of the affected eye may be impaired.

Affections of the eyelids are usually inflammatory in character.

Two classes are commonly recognized: those congestions and inflammations which are the result of eye-strain and which can usually be cured by proper glasses which relieve the cause of the strain, and those inflammations which are primary in character. The ciliary muscle is frequently overworked and becomes over-developed from protracted strain. The eyelids and the conjunctiva share sympathetically in the strain with resultant congestion.

"Blood-shot eyes, inflamed and encrusted eyelids and styes are frequently found associated with eye-strain. The styes are probably the result of infection from frequent rubbing of itching congested lids.

Styes, small inflamed swellings on the eyelid, occasionally develop repeatedly in children whose general health is not normal. The cause may or may not be due to eye-strain but in any case a physician should be consulted.

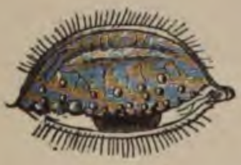

Fig. 160.—Trachoma, a true granular lid (after Nettleship).

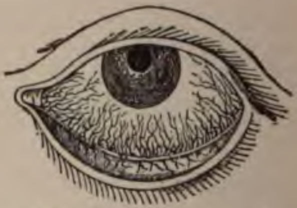

Fig. 161.—The hyperemia of acute conjunctivitis (Guthrie).

Granular lids are usually the result of chronic irritation and inflammation. In many cases this disease is due to constitutional causes, and occurs frequently in children who are predisposed to tuberculosis.

The local treatment frequently consists of cauterization with silver nitrate and the use of some mildly astringent eye-wash. Internally cod-liver oil, iron, and other tonic drugs are given, and an effort is made to improve the general health.

Trachoma, otherwise known as granular conjunctivitis, is a contagious disease of the conjunctiva. The condition seems like an exaggerated form of granular lids; small elevations form on the conjunctiva of the lids. If unchecked these tend to increase in number, and form a rough, inflamed surface that may result in ulceration of the cornea. Cicatricial contraction and deformity of the lids often result. In the milder forms the treatment for granular lids may be sufficient. In the severe cases an operation is needed.

Without treatment it is progressive. No treatment can repair the injury caused. It is only mildly contagious but whole families are frequently affected. The disease is widely prevalent in southern Europe and prevails chiefly among the poor. A treatment that has been markedly successful "consists in rolling the inner surfaces of the eyelids, thereby breaking up the granular beef-like tissue in which the germs lurk, and the application of silver nitrate or similar solution." (Cornell.)

Blepharitis is an inflammation of the borders of the lids at the point of the eyelashes. It is most frequently seen in the scrofulous or as a result of eczema. The treatment is constitutional, combined with antiseptic washes locally.

Conjunctivitis is an inflammation of the conjunctiva, the delicate membrane that lines the eyelids, and covers the eye-balls. It may occur as the result of irritation from dust, exposure to high winds, strong light, or heat, or irritant liquids, or gases, or may be caused by constitutional disorders. It may be of all degrees of severity. In mild cases an eye-bath, in which the eye is submerged in a glass of water as hot as can be borne, and repeated frequently, may be all that is needed. In more severe cases astringent and antiseptic washes are used.

In *purulent conjunctivitis*, due to a virulent form of sepsis, the most unremitting care is needed. Relaxation of effort, night or day, till the disease has been arrested is likely to cause the loss of the sight. All possible precaution to prevent infection of the other eye, if still unaffected, should be used. This disease has been discussed under the title of ophthalmia neonatorum in the section on Diseases of Children.

Iritis, or inflammation of the iris, may be caused by injury, syphilis, rheumatism, tuberculosis, and in various other ways or may be secondary to other ocular inflammation, traumatism, foreign body, etc.

Glaucoma is a disease of the eye marked by intense pressure within the eye. Hardening of the eye, atrophy of the optic disc, and blindness may result.

Cataract is a loss of transparency in the crystalline lens due to a hardening process.

Three forms are encountered: the senile cataract of elderly people, the juvenile or congenital cataract of the child and the traumatic cataract which follows any wound of the lens and which occurs frequently in serious eye wounds. Senile cataract is the most common form. It occurs as a rule in patients who are past fifty years of age.

Symptoms.—The first symptom noted is gradual diminution in sight. Some cataracts in elderly people require years for maturing (full development) while others advance rapidly. There are no inflammatory signs and the eyes usually appear normal otherwise. In senile cataract both eyes usually become involved, but generally one in advance of the other. A cataract is mature when it becomes entirely opaque (milky) and vision is restricted to counting fingers at 2 or 3 feet.

"**Retinitis.**—Inflammation of the retina, occasionally occurs in nephritis, diabetes, syphilis, tuberculosis, and in various forms of anemia.

"**Albuminuric Retinitis.**—In kidney diseases (acute and chronic Bright's disease) well-marked changes are frequently first seen in the retina and affecting both eyes. The picture as seen by the ophthalmologist in the dark room, consists in swelling of the optic nerve head or disc, small hemorrhages, white spots in the macular region and tortuosity of the retinal blood-vessels. The principal symptom experienced by the patient is early disturbance in vision although some cases do not complain of this feature at all. The treatment is directed to the kidney alone. As albuminuric retinitis is not infrequently seen in the nephritis occurring during pregnancy it should be of special interest to nurses in this connection."[1]

Mydriatics are drugs which dilate the pupils of the eye. Atropin sulphate, hyoscin, duboisin, eucain, and cocain are familiar examples. They are used in solution and dropped into the eye with a dropper.

[1] Henry Glover Langworthy.

Atropin sulphate is an extremely powerful and poisonous drug. Local poisoning from atropin sometimes occurs. Local symptoms are redness and thickening of the lid, especially the lower lid. In a susceptible patient 1/100 grain may produce dryness of the throat if swallowed, and symptoms of general poisoning have followed the swallowing of 1/50 grain.

Myotics are drugs which contract the pupils. Eserin is the one most used.

Caustics are substances which burn or destroy living tissues. In eye work, nitrate of silver is used either in solution or in stick or pencil form. The solution should not be exposed to light and is commonly kept in dark or paper-covered bottles. For general purposes a solution of 10 grains to 1 ounce (about 2 per cent.) is in common use. It should never be used in the eye if the cornea is ulcerated.

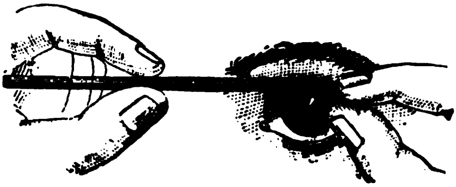

FIG. 162.—Method of everting the upper eyelid (J. P. C. Griffith).

Foreign bodies on the surface of the eye, such as cinders, dust, etc., may be removed in most cases without much difficulty. If under the upper lid the lid should be everted. To evert the upper lid draw the lid down, hold a toothpick or probe or lead-pencil across it, and roll the lid back over the instrument. This exposes the upper part of the eye-ball and a large part of the surface inside the lid. A twist of absorbent cotton around a probe or toothpick or a clean camel's-hair brush dipped in water may then be swept over the exposed surface very gently.

The lower lid may be everted by drawing it down, the patient being directed to look upward.

In everting the upper lid, instruct the patient to look down while the lid is being turned, and the operation is much easier.

Lime splashed in the eye should be first thoroughly washed out with warm water and bland oil, such as olive oil dropped in, if the pain continues. A teaspoonful of vinegar added to a glass of the water used for washing the eye will help.

Ophthalmic Nursing.—There are a few points in the nursing of "eye" patients which need special mention. One is regarding asepsis. A little suppuration in an ordinary wound may be of trifling consequence. When it occurs in ophthalmic surgery, particularly after iridectomies and other serious operations on the eye, it may mean blindness. Perfect healing is necessary, and the slightest infection may prove exceedingly disastrous. Therefore, more than ordinary precaution should be used to secure asepsis in dressings, instruments, hands, etc., and in the management of eye-drops and lotions. Are nurses always as careful as they should be about the cleanliness of eye-droppers and such things?

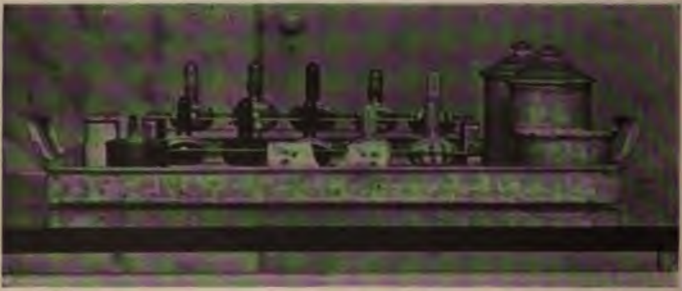

FIG. 163.—Eye tray.

Ophthalmic nursing includes proper methods of putting solutions and ointments into the eye, of eye irrigations, of the adjustment of bandages, the proper management of hot and cold applications, all of which are treated elsewhere. All such methods should be taught by practical demonstration.

After an iridectomy, or an operation done for the removal of cataracts or in glaucoma, it is most important that vomiting be prevented and that the patient be kept in the dorsal position. The bandages must not be touched or interfered with, the diet must be carefully administered, and the patient fed as long as both eyes are covered. Straining of any kind must be prevented. When the dressing is done the nurse must be able to vouch for the asepsis of everything used about the eye.

Nurses who have charge of ophthalmic patients should avoid contact with infectious patients, and especially those having a suppurating wound.

The directions regarding hygiene of the eye contained in the lessons on personal hygiene (see Primary Studies for Nurses), may profitably be reviewed in connection with this lesson. Prevention of eye defects is possible in many cases—a fact which most people do not know till too late.

It is important for a nurse to know something of the common diseases of the eye and the disastrous consequences of neglect of them, but it is still more important in connection with this lesson that she be able to demonstrate her ability to perform properly the nursing duties in connection with such patients. No examination or quizzing on the theory of this subject is half as important as an hour spent in testing the nurse's ability to properly evert an eye, administer eye-drops and lotions, irrigate the eye thoroughly, adjust bandages properly, prepare for and assist in dressings after eye operations, and properly care for serious ophthalmic operative patients.

CHAPTER XXIX

DISEASES OF THE EAR, NOSE, AND THROAT

The **pharynx** is a musculomembranous cavity between the mouth and nose and the esophagus. It has seven openings from it—the nasal passages, the esophagus, larynx, leading into the windpipe, two Eustachian tubes, and an opening from the mouth.

The **glottis** is the opening leading from the pharynx into the larynx.

The **larynx** is the organ of voice, situated at the top of the trachea and below the root of the tongue.

The **Eustachian tubes** lead from the pharynx to the ear, their function being to equalize the air pressure within the tympanum with that of the external air. The throat is the natural gateway to the body, and careful, proper cleansing of the throat in a variety of acute diseases will prevent many serious results and especially chronic affections of the ear.

In diseases of the upper air passages heredity plays an important part. All forms of disease germs have access to the nose and mouth through the air, and those parts are also exposed to infection by the medium of food and water.

The **ear** consists of three parts: the external ear, the middle ear, or tympanum, or drum, and the internal ear, or labyrinth.

The *external ear* consists of the pinna or auricle and the external auditory canal. These are outside the skull. The auditory canal is about 1¼ inches in length. In the lining of the canal are glands which secrete cerumen or ear-wax. This, with small hairs found there, tends to protect the ear from dust, insects, etc.

The *middle ear*, or tympanum, or drum is a small cavity hollowed out of the temporal bone. It is separated from the external auditory canal by a membrane called the tympanic membrane. In it is a chain of small bones which serve to transmit sounds, which are caused by vibration in the atmosphere, across the cavity to the inner ear.

"**Deafness** may be divided into two great classes: The one due to fault of the sound-perceiving apparatus and the other to fault of the sound-conducting apparatus. These are often spoken of, and quite properly, as nerve deafness and middle-ear deafness. The sound-perceiving apparatus is made up of the internal ear or labyrinth with its complex system of special nerve endings, the auditory nerve proper, and the center for audition in the medulla oblongata. All these structures are deeply seated, well protected and not easily susceptible to outside influences. The sound-conducting apparatus is made up of the external ear and the middle ear, which latter includes the tympanic cavity with its chain of ossicles, the drum membrane, mastoid cells and Eustachian tube. The structures composing the conducting apparatus are more superficially situated and are directly exposed to infection from without the body by way of the unbroken mucous membrane which lines the nasopharynx, Eustachian tube, middle ear, and mastoid cells.

"Middle-ear deafness comprises some 80 to 90 per cent. of the total number of those who come to the physician for help because of failing power of the auditory sense. In all but a very small percentage of cases of middle-ear deafness the condition is a secondary one, the primary disease being some degree of inflammation affecting the nose, pharynx, epipharynx, and by continuity involving the Eustachian tube and middle ear. There is only a small percentage of cases in which the nasopharynx plays no part. These cases may be due to trauma, to infection directly from the external ear through the drum membrane, or to infection directly from the blood-stream. In a few instances there is no inflammatory basis, vasomotor changes dependent upon constitutional disturbances being the causative factor.

"Non-suppurative otitis media is amenable to treatment inversely to the degree of deafness and the length of time it has been present. In the acute forms, either with or without secretion in the middle ear, the prognosis is good for recovery of normal hearing under proper constitutional and local treatment. Without treatment recovery may take place, or a mild degree of inflammation may persist and the condition assume the chronic form. The prognosis in the long existent non-suppurative conditions depends greatly upon the extent of the pathological changes in the middle ear and particularly upon the degree of fixation of the chain of ossicles and tympanic membrane.

Points emphasized by Tomlinson[1] are as follows:

1. "Middle-ear deafness comprises about 80 to 90 per cent. of all forms of deafness."

2. Ninety per cent. of the cases of middle-ear deafness have their origin in inflammatory conditions of the nasopharynx with extension to the ear by way of the Eustachian tube.

3. Adenoid tissue in the epipharynx is the most frequent predisposing cause of middle-ear disease.

4. Systematic aural examination in adenoid cases discloses the fact that a high percentage, probably 75 per cent., have some grade of ear involvement.

5. The findings of routine ear examination in children with

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[1] W. H. Tomlinson, M. D., in "Medical Record."

adenoids confirms us in the belief that many cases of middle-ear deafness first noticed in adult life have their origin in inflammatory conditions of the nasopharynx, dating from childhood.

6. The milder acute forms of catarrhal otitis should receive appropriate treatment for if untreated they are liable to assume the chronic for

7. Routine treatn catarrhal deafness leaves much to be desired. rk is necessary if the best results possible are t

Inflammation of th itis media) is usually due to a catarrhal inflan e nose and throat which extends through the . The streptococcus and the germs of tubercu , and pneumonia are all found in the middle ear in acute inflammation. The chief symptom is pain.

Heat, alkalin sprays to the throat and nose, and various local applications on cotton in the ear are tried. Filling the ear with warm water and applying hot fomentations externally is recommended for prompt relief of pain. In acute inflammation of the middle ear with suppuration, a frequent accompaniment of grippe, the syringing of the ear at short intervals (every hour if necessary) is recommended.

Many diseases of chronic suppuration of the ear are most difficult to deal with and the discharge is persistent. Irrigations of various kinds are used. Many physicians who have become discouraged with the result of irrigation have used dry boracic acid in the ear with very gratifying results. For this treatment a powder blower is used, or in emergency a quill or glass tube will answer.

Drainage, in cases of suppurating ears, is quite as important as in dealing with pus elsewhere. The physician in charge should be asked whether or not he desires the ear to be plugged with cotton. In acute cases which are suppurating it may be necessary to syringe the ear every hour.

Syringing the ear is practised for the removal of foreign bodies, for softening impacted cerumen, for cleansing, and for making local medicinal applications.

In all such treatments there are general rules to be observed.

1. Fluids should be warm, from 105° to 115°F.
2. Too much force should not be used.
3. Antiseptics of a mild character only should be used.
4. The patient should be seated so that the light falls on the ear.
5. The nozzle should be placed just inside the meatus.
6. The fluid should be directed toward the upper part of the canal and not directly against the tympanic membrane.
7. If a fountain syringe is used it should be held on a level with the ear, thus avoiding pressure.

Impacted Cerumen.—A soft-rubber bulb-syringe is often used, and in cases of impacted cerumen a piston-syringe is best. The common glass syringe, holding 2 to 4 ounces, is commonly used. Impacted cerumen is rather a symptom than a disease, and may be suspected in cases of sudden deafness without pain or dizziness. Peroxid of hydrogen injected into the ear to soften the mass is followed in a few minutes by copious irrigation with warm water. The canal is dried afterward by wiping with cotton dipped in 50 per cent. alcohol. A solution useful in softening an accumulation of wax when peroxid of hydrogen is not at hand is made by dissolving 20 grains of soda bicarb. in a mixture containing ½ ounce each of glycerin and water.

Gargles.—Concerning this much-used form of treatment, Kyle says: "Unless used scientifically solutions prescribed for this form of treatment are of little value, especially in the treatment of the posterior pillar of the tonsils, pharynx, and larynx. Investigations with methylen blue, mucilage, and magnesia, when used as a gargle, shows that the pharynx remains untarnished, while the tongue, hard palate, and anterior pillars were covered with the pigment."

The proper method of gargling, given by Kyle, is as follows: "Patients should be instructed to fill the mouth with the fluid, close the nose tightly, throw the head backward, and gargle. By this method the fluid will reach the pharynx and posterior walls of the tonsils."

Rhinitis, or acute inflammation of the mucous membrane of the nose, may be acute, chronic, atrophic, purulent, membranous, or caseous.

In *acute rhinitis,* which accompanies the ordinary cold, the treatment is both constitutional and local. That colds are frequently due to bacteria that infect the air passages, that such infection is easily spread, and that bronchial and lung affections may follow neglected colds should always be remembered. Rarely there is fever. In *chronic rhinitis* the mucous membrane is often swollen so as to obstruct the nasal passages, and the breath is offensive. Chronic torpidity of the liver is said to be always present in nasal catarrh. Chronic nasopharyngeal catarrh is responsible for a large proportion of the cases of deafness.

In all except the acute rhinitis, local treatment, extending over a considerable period, combined with measures for improving the general health, are needed. The use in the atomizer of mild antiseptics and of oil spray is common.

Treatment consists of nasal douching to cleanse the passages, stimulation of the mucous surfaces in some cases, removal of growths from the pharynx, and measures to reduce the hypertrophied condition of the mucous membrane. Surgery is necessary in many cases. A solution for the nasal douche that has proved very satisfactory is made of soda bicarb., 1½ drams; listerin, 6 drams; and water, 1 ounce, diluted as may be needed.

The Nasal Douche.—"The danger of using this douche must not be underestimated, since disturbance in the sense of smell, headache, and suppuration of the middle ear may be occasioned."

Occasionally in cases of scarlet fever and diphtheria nasal douching becomes necessary. A soft-rubber bulb-syringe may be used. The patient is instructed to lie on one side, and the fluid is injected through the upper nostril. The fluid should run out of the other nostril or the mouth. The position of the patient is then changed to the other side and the process repeated in the same way. Snuffing of fluids up the nose by the patient is condemned as a dangerous, irritating practice, liable to aggravate disease rather than relieve it. Cleansing of the nasal cavity by means of cotton on a toothpick or probe is often useful in cases of infants or children who are suffering from temporary obstruction of the upper air passages. A little vaselin or olive oil will help loosen up the crusts which have formed inside the nose.

Inhalations of steam, the head being wrapped in a thick towel or shawl and held over a jug of boiling water, are useful to clear the nose and make breathing easier in case of severe "cold in the head" or grippe.

Nasal feeding is sometimes needed after operations on the mouth and throat. It is accomplished by means of a funnel and tubing which is attached to a small soft-rubber catheter. The fluid food is usually either milk or eggs or both. Before passing the tube glycerin or milk may be used as a lubricant. The patient is in a sitting position, with the head held level. The tube is passed backward, never upward, and steadily pushed forward. When it reaches the throat it may be obstructed for a moment. When the patient endeavors to swallow it the pushing forward of the tube into the esophagus is continued. If coughing is excited the tube must be removed. Before pouring the food into the funnel a little water may be given to make sure the tube is clear. The patient must be breathing comfortably before any attempt is made to introduce the food. Pour the food very slowly, so that it will not regurgitate and cause coughing. The danger in this method is that the tube may enter the larynx and the fluid is poured into the lungs. As a rule, however, such an accident is prevented by the violent coughing which it causes.

Thompson says, "In feeding comatose infants or children with tubercular meningitis, apoplexy, etc., a fluid may be poured into the nostril with a spoon rather than into the mouth. It disturbs the child less than does the effort to force open the mouth, and if the head is lying back the fluid trickles down the posterior pharyngeal wall. Any excess of fluid is returned through the other nostril. There is no greater danger of choking when fed by this method than by mouth."

Operations on the mastoid process of the temporal bone are common. The preparations include, beside the usual attention to diet, catharsis, etc., careful preparation of the field of operation. An area extending about 2 inches from the ear is shaved. In women the lock of hair in front of the ear should be left. The part is thoroughly scrubbed, the canal cleansed with peroxid of hydrogen, and filled with antiseptic gauze.

Hemorrhage due to accidental or intentional opening of the large vein found in that region is a common emergency which should be anticipated.

Operations on the mouth and throat in children are commonly undertaken for the correction of cleft-palate and harelip. In the care of such patients great watchfulness is needed. If possible before operation it is wise to practice spraying of the mouth, so that the child may have less fear of the treatment afterward. The mouth is always swarming with bacteria, and it is impossible to sterilize the site of operation as is usually done. It should, however, be gotten as clean as possible, and three days before operation is none too early to begin. Whatever form of mouth wash is used (permanganate of potassium, peroxid of hydrogen, and boracic acid are all used) it should be used faithfully every two or three hours. The spaces around and between the teeth and the parts to be operated on should receive especial attention after taking food. The cleansing may be done by means of spraying, irritation, or swabbing, or by a combination of all three. The method used is unimportant so long as the mouth is cleansed as thoroughly as possible.

Children do not bear starvation as well as adults, and feeding after operation in these cases cannot be long deferred. The rule is usually small quantities of fluid at frequent intervals. The physician will direct what methods are to be employed. The medicine dropper is often used in such cases in young children.

In **inflammation of the throat** ice-bags externally are recommended and Dobell's solution as a spray locally.

External douching of the throat daily with cold water is a useful method of preventive treatment in cases of chronic inflammation of the throat. The flow should be sudden, and some pressure adds to the stimulating effect.

Tonsillitis.—Inflammation of the tonsils "may be simple, follicular or phlegmonous. It usually occurs during youth, and may result from exposure to cold and wet, heredity, lithemia, rheumatic diathesis, and changeable climate. Various forms of bacteria are associated with this disease. In simple tonsillitis the tonsils are enlarged, dry, and painful.

Swallowing is difficult. There is rise of temperature, chilliness, and general aching. Broken doses of calomel, followed by Epsom salt, with sprays to the throat of peroxid of hydrogen or other antiseptic, are common forms of treatment.

It should be remembered that the prostration of strength in tonsillitis is unusually rapid and often out of proportion to the apparent severity of the disease. One attack renders a patient more liable to subsequent infection.

Follicular tonsillitis is distinguished by the formation of small, whitish, cheesy masses on the tonsils. The exciting cause is believed to be germs, and as it is communicable the discharges from nose and throat should be disinfected.

Phlegmonous tonsillitis, or quinsy, is characterized by great pain and usually pus formation.

Hypertrophy of the tonsils is a common condition often associated with adenoid growths. It may give rise to mouth-breathing, snoring, and deafness. The treatment is both local and general. In children it is better to have the tonsils removed.

Intubation is the insertion of a tube into the larynx through the glottis for the introduction of air.

Tracheotomy is an artificial opening into the trachea.

Since the introduction of the antitoxin treatment in diphtheria intubation and tracheotomy are rarely practised in that disease. Should the operation be necessary the child must be held as the physician desires. Two positions are used. The child is wrapped in a blanket with the arms confined. If the upright position is required, the child may be held on the nurse's lap, her knees securing the child's feet. The head will rest on her shoulder. The head is held firmly and a mouth gag inserted between the teeth. Or the physician may wish the child placed on a table, with the head extending over the end and firmly held, or the neck may rest on a sand-bag or blanket. The method of introducing the tube does not specially concern the nurse, as she is not expected to do it.

The after-care of such patients demands constant watching. The tube is liable to become obstructed, which will be shown by difficulty in breathing and cyanosis. In such cases it may be necessary to remove the tube by pressing with the thumb in front of the trachea just below the lower end of the tube; steady pressure will usually force the tube into the mouth. Artificial respiration may be needed in such cases till the physician arrives. In many cases a silk thread is attached to the tube at the time of insertion and left there to facilitate its removal. The tube used in tracheotomy is different from this tube passed through the glottis.

The *tracheotomy tube* consists of an inner and outer tube. The outer tube is secured by tapes passed around the neck, and stays there till removed by the physician. The inner tube has to be constantly removed to cleanse it. The physician will give directions as to the length of time it may be left.

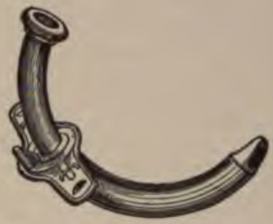

Fig. 164.—Tracheotomy-tube with pilot (Stoney).

Occasionally spraying into the outer tube is done. Long feathers are used to keep the outer tube and trachea free from membrane, and care should always be used that such feathers are perfectly whole and sound before using them. The tube is kept covered by a piece of gauze as a protective and a filter for the air.

Feeding During Intubation.—In feeding it is a good plan to hold the child on the lap, with the head lower than the body. Fluids or semifluid foods are given in such cases.

It is important for the nurse in charge of a tracheotomy patient to thoroughly understand the tube, so that she will make no mistake and remove the whole tube when the inner tube only should have been removed.

CHAPTER XXX

DISEASES OF THE SKIN AND MORBID GROWTHS

A *lesion* is defined as an injury, wound, or local degeneration.

Macules are circumscribed, discolored patches of skin of variable shape and size.

Wheals (pomphi) are edematous, irregular, pinkish elevations of the skin, transitory in character.

Papules are small solid elevations of the skin.

Vesicles are small elevations of the skin with clear watery contents.

Bullæ (blebs) are elevations of the skin, differing in size (from a pea to an egg), containing clear or opaque fluid.

Pustules are small elevations of the skin filled with pus or lymph.

An *excoriation* is a superficial loss of tissue which occurs usually as the result of chafing or scratching.

Ulcers are round or irregular losses of tissue involving the skin and subcutaneous tissue.

Scars (cicatrices) are new formations occupying the region of former losses of tissue.

A *fissure* is a crack or wound in the superficial tissue due to disease or injury.

A *fistula* is a deep, sinuous ulcer, often leading to an internal hollow organ.

Erythema is a morbid redness of the skin due to congestion of the capillaries, and is of many varieties.

Urticaria (hives) is usually caused by some disorder of the digestive tract. A great many people have an idiosyncrasy regarding certain foods which others may take without inconvenience. Foods liable to produce hives are cheese, lobsters, crabs, sausage, pork, nuts, strawberries, oatmeal, tomatoes, and mushrooms. Many drugs produce rashes, and the sting of the nettle, mosquito, or wasp may also cause hives.

The *treatment* is directed toward clearing out the stomach and intestinal tract and the allaying of the itching. An emetic, followed by a dose of Epsom salt and an alkalin bath, using a tablespoonful of washing soda to every 4 gallons of water, are useful measures. To relieve the itching equal parts of vinegar and water or a carbolic solution, 1:40, may be applied locally to the spots. Water in large quantities internally is recommended. In cases which recur the diet should be most carefully watched to try to discover the cause.

Drug rashes occur frequently, but are seldom more than a transient hyperemia of the skin. There is no fever and no characteristic symptoms appear except the rash. Drugs which may cause a rash are antifebrin, antipyrin, arsenic, belladonna, bromids, iodid of potassium, quinin, salicylic acid, turpentine, morphin, digitalis, copaiba. A large soap-and-water enema will sometimes cause a rash in susceptible subjects.

Predisposing causes are idiosyncrasy, excessive perspiration, imperfect kidney and bowel elimination, large doses, and long-continued administration.

Septic rashes resembling very much the eruption of scarlet fever occasionally follow an operation or occur in the course of typhoid fever or other acute diseases. There is more or less fever, furred tongue, rapid pulse, and restlessness. The rash usually subsides in a few days. Desquamation is often quite marked in such cases.

Boils (furunculus).—A furuncle is a circumscribed inflammation of a sebaceous gland or hair follicle due to the introduction into the skin of pus-producing germs. Impoverished health may render the soil favorable, but it does not produce the boils. One boil is very likely to infect the surrounding area and cause numerous others unless careful disinfection is practised. Abortive treatments usually fail. Hot antiseptic compresses till the softening takes place and the slough or core separates, careful disinfection of the surrounding area, and an antiseptic ointment after are the usual forms of treatment.

Chafing (erythema intertrigo) is a reddening of the skin where the surfaces are in apposition, such as the groin, axilla, neck, etc. This is preventable in most cases by cleanliness and the use of an astringent dusting-powder or vaselin. A good astringent dusting-powder is made of equal parts of zinc-oxid powder and carbonate of magnesia. Boric acid and zinc-oxid powder in equal parts is also good. The frequent application of zinc ointment where there is much moisture often gives better results than the powder.

Bed-sores are obstinate and sometimes gangrenous sores caused chiefly by pressure of the body against the bed. Lack of cleanliness, crumbs, wrinkles, and moisture are contributing causes. In addition to the removal of the causes, massage of the part threatened and some local application are common measures used. A paste made of castor oil and oxid of zinc has proved useful. When a wound has formed, the treatment is along surgical lines.

Poison-ivy Rash.—One of the best treatments for this is the application to the inflamed parts of black wash and before the part is quite dry smearing with oxid of zinc ointment. Carbolized oil applied locally often gives good results in these cases.

Hysterical skin diseases are sometimes encountered and form a very puzzling class of cases. Hyperesthesia of the skin also is common.

Eczema (otherwise known as tetter or salt rheum) is a non-contagious inflammation of the skin. It occurs at all ages and under all conditions of life. About one-third of all cases of skin disease are eczematous in character. It may be acute, subacute, or chronic. There are several distinct varieties of the disease.

Causes.—There is no doubt that many individuals who suffer repeatedly from this disease have a predisposition to it, and the disease is provoked by very slight causes. Internal causes include disorder of the digestive organs, nervous affections, general debility, rheumatism, kidney diseases, and in some cases uterine affections.

Among external causes are strong soaps containing too much alkali, friction of the skin surfaces, or by clothes, dust, or any irritation to the skin.

Management.—The best authorities are agreed that in a great many cases the disease is due to errors in dieting. The disease often runs a chronic course, may persist indefinitely, and recur a [illegible] gain unless the individual will change his habits of life and especially of eating.[1] A prominent physician in charge of a skin clinic said, "For every patient suffering from an inflammatory skin disease who was eating too little and suffering lack of nourishment there were a score or more who were eating too much, and thus feeding the eruption. The character of the food in the treatment of cutaneous and other diseases is of less importance, perhaps, than the manner in which the food is taken. Hasty eating, irregular eating, and meals taken under the stress of excitement and worry were the daily experience of most of our patients."

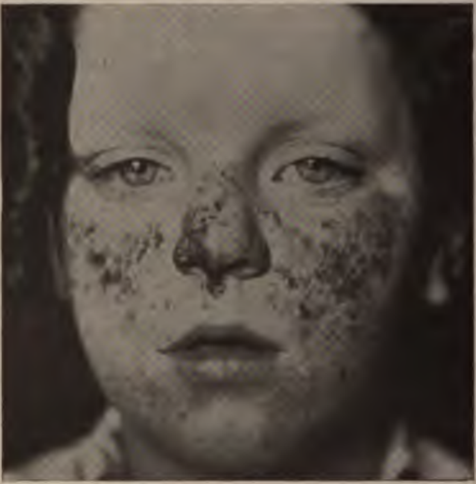

FIG. 165.—Eczema of face (Stelwagon).

The skin is an important secretory organ, and when waste products accumulate in the blood faster than they can be gotten rid of, the glands that assist in excreting are overworked. The secretions of the skin are altered. Irritation and finally eruption results.

Diet.—The regulation of the diet is largely an individual matter, but rich foods, and especially fried foods, should be avoided. Oatmeal is believed to intensify the disease, and in individuals who are predisposed to this affection should be used sparingly, if at all.

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[1] C. J. Fox.

Foods prohibited are sweet potatoes, fried egg-plant, cabbage, cheese, bananas, apples, soda-water, syrups, salt ham and pork, and corned beef, fried oysters, fatty foods, rich gravies, preserves, and fancy desserts of all kinds.

Foods allowed are whole-meal bread, freshly-cooked vegetables, eggs, milk, and fresh fish or meat not oftener than once a day. Obstinate cases have improved markedly on a diet of bread and milk only, continued for two or three weeks. An exclusive diet of boiled rice unsweetened, bread, butter, and water has proved markedly successful in many severe and obstinate cases. The results are apparent usually in about three days, and in from four to seven days the acute symptoms subside. A laxative and an alkaline diuretic are sometimes given preceding the diet. In most cases over-eating and constipation need to be strictly guarded against.

Local treatment varies with the type and stage of the disease. In acute cases water acts as an irritant, and is used only sufficiently to secure ordinary cleanliness. Bran, starch, or borax added to the water lessens the irritant effect. In chronic cases soap and water may have a therapeutic value. Linseed or olive oil are used to soften the crusts, and occasionally starch or linseed poultices are applied if the crusts are very adherent. In applying a starch poultice to the head, thick, boiled laundry starch is used and applied while warm on a piece of cheese-cloth. A little cap fitted over the head and tied under the chin is better for keeping it in place than a bandage. It needs to be renewed about every two to three hours. Very tenacious crusts are sometimes loosened in a night under this treatment. A great variety of powders, lotions, and ointments are used in dealing with this affection, but the hygienic and preventive treatment is the one most important to nurses.

Eczema is often mistaken for psoriasis, herpes zoster, scabies, and occasionally for erysipelas.

Psoriasis is defined as a chronic inflammatory disease of the skin, characterized by reddish, dry, rounded, sharply defined scaly patches. Itching is usually slight, if not entirely absent. The elbows, knees, and scalp are the common points of attack, though the trunk is frequently involved. The treatment is both constitutional and local. The disease tends to recur.

Scabies (itch) is a contagious animal parasitic disease characterized by intense itching, which is worse at night. The parts frequently attacked are the hands, between the fingers, the wrist, axilla, breasts, buttocks, and the inner side of the legs and toes. The disease is highly contagious, and may be contracted through the medium of towels and bedclothes or by direct contact.

Treatment.—The disease yields readily to treatment, but persists indefinitely if neglected. Sulphur ointment is one of the most common and effectual of all remedies, or sulphur may be combined with balsam of Peru or other drugs. A vigorous, prolonged hot soap-and-water bath is given before the ointment is applied.

Favus is a contagious skin disease due to a parasitic fungus and marked by the formation of round, cup-shaped crusts, resembling honeycomb, which are usually situated over hair-follicles. The crusts are attended with intense itching and have a peculiar mouldy odor.

Pediculosis is due to the invasion of the scalp or other parts of the body by the pediculus. The ova, or nits, are attached to the hair and hatch out in from three to eight days. One of the most efficacious remedies is kerosene oil, either pure or with equal parts of olive oil. It should be thoroughly applied once or twice and followed by a shampoo with water and green soap. Vinegar or dilute acetic acid are useful in removing the "nits."

Acne is an inflammatory disease characterized by a pustular eruption in and around the sebaceous glands and occurring chiefly on the face. Comedones or blackheads frequently give rise to acne. The disease is rare after thirty and occurs most frequently about the age of puberty. Dyspepsia and constipation are very often present as predisposing causes.

The dietetic treatment is most important. Cold baths, outdoor exercise, and regular life are helps toward a cure. The foods prohibited in eczema are best avoided in obstinate cases of acne. Vigorous washing and soaking of the face, using hot water and soap, before bedtime and a mixture of powdered sulphur and starch rubbed in is useful. A lotion combining corrosive sublimate solution and compound tincture of benzoin is sometimes prescribed, but care must be used that the mercury and sulphur are not used without an interval of a few days, and that the face is thoroughly cleansed of the one before using the other, or a blackish discoloration will result. Applications of peroxid of hydrogen to the face after a thorough preliminary cleansing with hot soap and water are also recommended. As peroxid is an active bleaching agent, care must be used that it does not touch the hair or eyebrows.

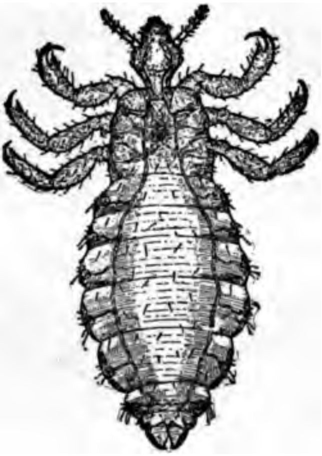

FIG. 166.—Pediculus Corporis × 25. Female. Dorsal surface (after Duhring).

Varicose ulcers are caused by varicose, or unnaturally swollen, veins. The skin becomes first congested, its nutrition impaired, and necrosis of tissue follows. Remedies almost innumerable have been tried. One of the newer methods of treatment described by Eric Carl Beck[1] and used successfully in a considerable number of cases consists in the vigorous scrubbing of the ulcer previous to the application of a wet antiseptic dressing. The patient is anesthetized and all crusts surrounding the ulcer or on any other portion of the leg are removed. An ordinary stiff brush, tincture of green soap, and sterile water are used, and the scrubbing continues till the base of the ulcer is smooth and the edges stand out clear and hard. Before applying the wet dressing the ulcer and adjacent parts are painted with tincture of iodin.

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[1] "Medical Record."

Lupus Vulgaris (Tuberculosis of the Skin).—There are different varieties of this disease, which is due to an invasion of the skin by the tubercle bacillus. The disease occurs most frequently on the face, especially the nose, cheeks, and ears. The disease is treated whenever possible by the Finsen light apparatus or by exposure to the *x*-rays, the general health being improved by careful attention to hygiene.

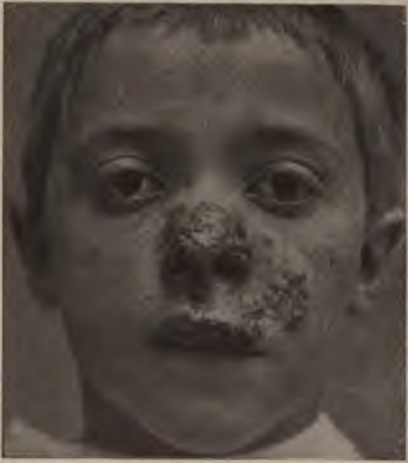

FIG. 167.—Lupus vulgaris of some years' duration (Schamberg).

Skin-grafting.—This operation is frequently made necessary to repair wounds from burns or other injuries. The nurse's part in the operation consists chiefly in proper preparation of the area from which grafts are to be taken and assisting in preparing the granulating surface which is to receive grafts.

Proper preparation of the area to receive grafts is important. The following technic is common: "On the day preceding operation all secretions and crusts are removed. The granulations are painted with tincture of iodin and dressed either with balsam of Peru and castor oil, 1 :3, or with moist boric or salt gauze. The dressings are removed at the time of operation and the wound washed carefully, without causing bleeding, with sponges dipped in warm salt solution. The surface is dried thoroughly and a pad of dry gauze placed over the wound; it is pressed down firmly on the granulations and removed only when the operator is ready to apply the grafts. It is most important that the surface to be grafted should be perfectly dry, as the grafts adhere much better to a dry surface and are less liable to be subsequently displaced."[1]

The area from which grafts are taken is shaved and washed thoroughly with green soap and water. It is rinsed with sterile water sponged with ether followed by alcohol, and finally washed with normal salt solution and dried with sterile gauze.

Diseases of the lymphatic glands are common. These glands are arranged in chains and are found among other places in the neck, axilla, groin, thorax, and abdomen.

Cervical Adenitis.—Enlargement of one or more glands of the neck is one of the most common affections of this type and is often of tuberculous origin. It is a mistake, however, to attribute all cases to tuberculosis. It is said that lice, with consequent eczema, is a not infrequent cause, especially in poorer patients who occupy crowded insanitary quarters. Any inflammation about the ear, nose, or throat may be followed by glandular enlargement. If the glands are much enlarged surgery is usually resorted to.

Lymphatism, a general enlargement of all the lymphatic glands and structures, sometimes occurs.

A **tumor** has been defined as a swelling, especially one due to morbid growth of a tissue not normal to a part. For practical purposes tumors may be divided into simple and malignant.

A simple tumor may grow and be troublesome and unsightly, yet its progress need not necessarily shorten life.

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[1] J. S. Davis in D. Jour. of A. M. A.

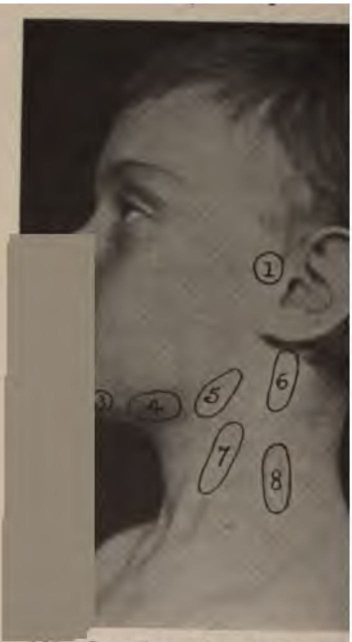

FIG. 168.—Location of lymphatic glan

to the nearest lymphatic glands, and by the
to remote parts. Malignant tumors tend

Fatty tumors, which may appear in ordinary subcutaneous fat in parts of the body subjected to pressure.

A *fibroid tumor*, or fibroma, composed of connective tissue and often found in the uterus and in the sheaths of the nerves.

An *angioma*, a tumor composed largely of blood-vessels having their seats in the skin and subcutaneous tissue. Some birthmarks are of this character.

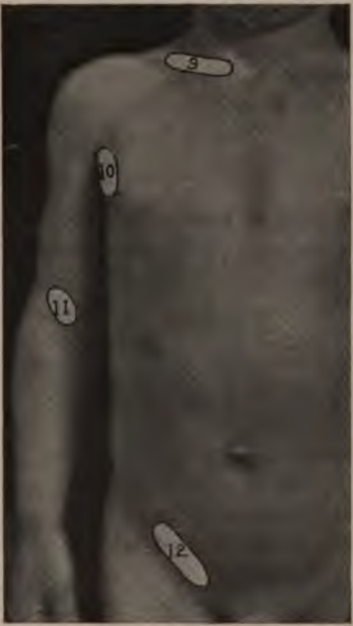

FIG. 169.—Location of lymphatic glands (Kerr).

Cysts of various kinds have been classed as simple tumors. They are membranous bags, with walls of greater or less thickness, containing fluid or semifluid matter.

A *keloid* is a connective tissue new-growth, appearing as variously sized and shaped, smooth, firm, reddish elevations.

Neuroma of the skin, otherwise known as nerve tumor, is an affection characterized by one or more pin-head to hazelnut-sized tubercles made up of connective tissue and nerve fibers and accompanied by severe paroxysmal pain.

Myoma is a tumor composed largely of unstriped muscular fibers, but may contain fibrous connective tissue, vascular tissue, or lymphatic tissue.

Epithelioma, otherwise known as epithelial cancer or rodent ulcer, belongs to the class of malignant growths. Superficial epithelioma first appears as one or more yellowish or reddish papules or warty outgrowths. These show a tendency to become excoriated and covered with crusts. In the course of months or years the deposit increases or new lesions appear which undergo degeneration with the formation of superficial ulcers.

The treatment for most of these conditions consists in removal of the growth and diseased tissue by means of the knife, cautery, or electrolysis. In rodent ulcers the Finsen light treatment, either alone or combined with the *x*-rays, is much used. Almost all such cases need systemic treatment, nourishing diet, and hygienic conditions of living in addition to local treatment if the best results are to be expected.

A *gumma* occurs in syphilitic subjects.

Malignant solid tumors may be divided into two classes—sarcoma and carcinoma. From the standpoint of the results they closely resemble each other, but under the microscope and in some details they vary much.

A *sarcoma* has been defined as a malignant disease characterized by variously shaped and colored tumors occurring in the skin and subcutaneous tissues, either as primary or secondary growths. A sarcoma is regarded as a more hopeful type of disease than carcinoma.

A *carcinoma* has been defined as a malignant tumor composed of connective tissue enclosing epithelial cells. "Recent observations seem to point to its bacterial origin and infectious nature." The relation of diet to cancer is now being made a subject of serious study.

Education of the public concerning cancer is being vigorously pushed. What the public should be taught has been a matter of dispute, but the following "Articles[1] of Faith" concerning cancer will serve as a guide till the disputed question is settled:

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[1] W. Seaman Bainbridge, M. D.

1. That the hereditary and congenital acquirement of cancer are subjects which require much more study before any definite conclusions can be formed concerning them, and that, in the light of our present knowledge, they hold no special element of alarm.
2. That the contagiousness or infectiousness of cancer is far from proved, the evidence to support this theory being so incomplete and inconclusive that the public need have no concern regarding it.
3. That the communication of cancer from man to man is so rare, if it really occurs at all, that it may be practically disregarded.
4. That those members of the public in charge of or in contact with sufferers from cancer with external manifestations, or discharges of any kind, need at most take the same precautionary measures as would be adopted in the care of any ulcer or open septic wound.
5. That in the care of patients with cancer there is much less danger to the attendant from any possible acquirement of cancer than there is of septic infection, or blood poisoning from pus organisms.
6. That in cancer, as in all other disease, attention to diet, exercise and proper hygienic surroundings is of distinct value.
7. That, notwithstanding the possibility of underlying general factors, cancer may, for all practical purposes, be at present regarded as local in its beginning.
8. That, when accessible, it may, in its incipiency, be removed so perfectly by radical operation that the chances are overwhelmingly in favor of its non-recurrence.
9. That, when once it has advanced beyond the stage of cure, suffering in many cases may be palliated and life prolonged by surgical and other means.
10. That while other methods of treatment may, in some cases, offer hope for the cancer victim, the evidence is conclusive that surgery, for operable cases, affords the surest present means of cure.

11. That among the many advances in and additions to cancer treatment, the improvements in and extensions of surgical procedure surpass those in any other line, and fully maintain the preëminent position of surgical palliation and cure.

12. That there is strong reason to believe that the individual risk of cancer can be diminished by the eradication, where such exist, of certain conditions which have come to be regarded as predisposing factors in its production.

13. That some occupations, notably working in pitch, tar, paraffin, analin or soot, and with *x*-rays, if not safeguarded, are conducive to the production of cancer, presumably on account of the chronic irritation or inflammation caused.

14. That prominent among these predisposing factors, for which one should be on guard, are: general lowered nutrition; chronic irritation and inflammation; repeated acute trauma; cicatricial tissue, such as lupus and other scars, and burns; benign tumors—warts, moles, nevi (birthmarks), etc.; also that changes occurring in the character of such tumors and tissues, as well as the occurrence of any abnormal discharge from any part of body, especially if blood-stained, are to be regarded as suspicious.

15. That while there is some evidence that cancer is increasing, such evidence does not justify any present alarm.

16. That suggestions which are put forward from time to time regarding eugenic, dietetic and other means of limiting cancer, should not be accepted by the public until definitely endorsed by the consensus of expert opinion. Such consensus does not exist to-day.

17. That so far as we know there is nothing in the origin of cancer that calls for a feeling of shame or the necessity of concealment.

18. That it will be promotive of good results if members of the public who are anxious about their health and those who wish to preserve it will, on the one hand, avoid assuming themselves to be sufferers from one or another dreadful disease, but, on the other hand, will submit themselves periodically to the family physician for a general overhauling.

19. That at all times and under all conditions there is much

to be hoped for and nothing to be feared from living a normal and moderate life.

20. That the finding of any abnormal condition about the body should be taken as an indication for competent professional and not personal attention.

21. That watchwards for the public until "the day dawns" and the cancer problem is solved, are: Alertness without apprehension, hope without neglect, early and efficient examination where there is doubt, early and efficient treatment when the doubt has been determined."

CHAPTER XXXI

ACCIDENTS AND EMERGENCIES

Burns are caused by contact with dry heat, fire, or certain chemicals.

Scalds are caused by contact with moist heat or hot fluids.

These wounds are divided into three classes:

First degree burns are those having a mere reddening of the skin.

Second degree burns are those characterized by the formation of blisters.

Third degree burns are those in which there is charring and the destruction of tissue.

When the clothing takes fire the unfortunate individual should be forced to lie down and be wrapped in a blanket, carpet, or garment large enough to envelop the body. To keep the flames from the face and prevent the hot air from being inhaled is an exceedingly important precaution.

Shock occurs in some degree in all cases of severe burns, and is likely to be in proportion to the area of flesh injured. Shock is more marked in burns of the chest and abdomen, and in children in any serious burn the shock is usually profound. Congestion of the internal organs commonly follows shock.

If the shock is severe treatment should be directed toward combating it by the usual means. The dressing of local wounds should be deferred till reaction has set in.

Dressing.—Until proper materials for dressing are available cloths wrung out of normal salt solution may be applied.

The utmost care should be used in removing clothing. In severe cases it is best to cut the garments.

Carron oil (equal parts of linseed oil and lime-water) is one of the best dressings. It is applied by saturating gauze with it and covering with cotton. Oxid of zinc ointment on gauze is another equally good dressing for such wounds.

Frost Bites and Freezing.—For the former rubbing the parts vigorously with ice-water or snow is the common treatment.

When unconsciousness or stupor occurs from freezing the temperature should be gradually elevated and hot drinks, stimulants, friction, and artificial respiration used. If necessary a bath in tepid water, very gradually elevating the temperature, may be tried, after which warm blankets should be applied.

A **hemorrhage** is the escape of blood from the cavity of the blood-vessels. It may be internal or concealed, and external.

Varieties.—1. Capillary hemorrhage, the least dangerous form.

2. Venous hemorrhage, which escapes in a continuous flow and is dark red, almost purple, in color.

3. Arterial hemorrhage, the most serious form, is bright red in color and usually comes in interrupted spurts.

Capillary hemorrhage may usually be checked by direct pressure upon the wound with a piece of clean gauze or with the clean finger. If this does not check it water at a temperature of 110° to 120°F.; very cold water or ice may be applied. Styptic drugs are common salt, powdered alum, turpentine, tannic or gallic acid, compound tincture of benzoin.

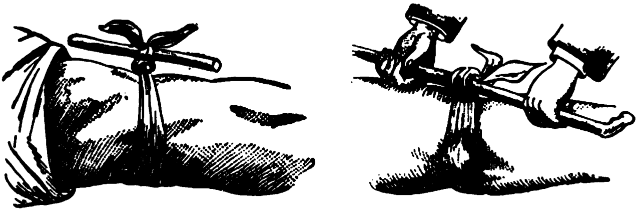
Venous Hemorrhage.—In case of venous hemorrhage remove all tight clothing which would interfere with the return of the blood to the heart, such as garters, corsets, or tight bands. Elevate the bleeding part and keep it elevated for some hours after hemorrhage has ceased. Apply direct pressure to the wound.

In *arterial hemorrhage* all the above measures can also be used. The patient should be kept absolutely quiet and lying down.

In wounds of the face and head pressure with the thumb against the bone over the artery will usually check it. On the legs or arms pressure is maintained by a torniquet applied above the bleeding point. The tourniquet should be applied only tight enough to check the bleeding, and never left on longer than three hours. It is better to loosen it in an hour's time, when, if the bleeding begins again, it may be tightened.

Internal Hemorrhage.—In severe hemorrhage from the lungs or stomach:

1. Send for medical assistance.
2. Keep the patient on his side or back, with head and shoulders slightly elevated by pillows, and absolutely quiet. Allow no talking or exertion.



Figs. 170 and 171.—Impromptu tourniquets for compressing an artery with a handkerchief and a stick (Stoney).

3. Admit plenty of fresh air and remove all constricting bands.
4. Give bits of ice to swallow, strong iced tea, or vinegar and ice-water. Give ergot or, better, ergotole hypodermically, if obtainable.
5. Apply an ice-cap over the chest.
6. If the patient is faint apply warmth to the feet and smelling salts to the nostrils. Stimulants if used at all should be used with extreme caution in such cases.

Hemorrhage from the nose (epistaxis):

1. Keep the patient sitting up.
2. Never allow him to hold his head over a basin.
3. Give plenty of fresh air and keep the arms stretched upward, above and behind the head

4. Pinch the nose below the bridge between the thumb and forefinger.

5. Syringing the nostrils with an alum solution, using one to two teaspoons of alum to a pint of water, may be tried in extreme cases.

If these measures do not check the bleeding a physician should be summoned.

Hemorrhage into the abdomen following surgical operation is common. If there is bleeding from the wound sometimes the application of fresh dressings, packing them in very tightly around the bleeding point, and reapplying the bandage as tightly as possible, will check it if it is from a superficial blood-vessel. If the hemorrhage is concealed, elevation of the foot of the bed and stimulation are the chief measures left to the nurse to use till the physician arrives to reopen the wound and find the bleeding vessel.

Stimulants need to be used with great caution in case of hemorrhage, as their use tends to increase it. It is considered better to withhold them, as a general rule, till hemorrhage has been checked. If the hemorrhage is severe, however, prompt stimulation may be exceedingly necessary. In these cases salt solution, adrenalin, strychnin, and digitalis are frequently given, also a small dose of morphin. Ergot (or ergotole hypodermically) are useful aids, but in hemorrhage from a large vessel are of no avail.

In *shock*, a sudden vital depression due to an injury or emotion which makes a severe impression on the nervous system, the face is pale, pinched, and anxious. There is great prostration of strength, coldness of the skin, cold perspiration, pulse weak and rapid, pupils dilated. Temperature often subnormal, but not always. Shock always indicates profound changes in the circulation of the individual. By the use of instruments which record the blood-pressure it has been found that shock following surgical operations is most likely to occur when some of the following conditions are present:[1]

1. When large nerves are involved.

2. The kind of violence used—shock being less from a clean cut than from a crush.

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[1] Garnett Wright, M. B., Manchester, Eng.

3. Long exposure of the abdominal viscera or rough handling of these during operation.

4. Lowering of the temperature of the body or the exposure of a large vascular area.

5. Shock is more likely to occur in the extremes of age—old age or childhood.

6. The length of time the patient is under the anesthetic.

7. The condition of the patient before operation.

"Ether raises the blood-pressure and does not produce a fall afterward. It is usually chosen when shock is feared; chloroform causes lowered blood-pressure from beginning to end of administration."

Management.—Keep the patient lying down, absolutely quiet, with head low. Apply friction and heat to the extremities. Stimulation by mouth or hypodermically should be given, or a stimulating enema of hot coffee or saline solution, or the latter by hypodermoclysis. A considerable difference of opinion exists as to the value of drug stimulants in shock. Alcohol and strychnin are said by many to be of little use. Adrenalin and ergot are often given.

Shock may easily be mistaken for concealed hemorrhage, as many of the same symptoms are found in both causes. Brickner[1] gives the following table, showing in parallel columns the difference in the two conditions:

	SHOCK	CONCEALED HEMORRHAGE
Symptoms in general.	Often regressive.	Always progressive.
Local symptoms.	Absent.	Often present, *e.g.*, cough; localized pain or tenderness; abdominal distention; vomiting; hematemesis; hematuria, etc.
Mentality.	Dull; stuporous.	Active.
Restlessness.	Slight.	Often great.
Pallor.	Moderate.	Very marked, especially of mucous membranes; progressive.
Sweating.	Frequently present.	Usually absent.

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[1] "The Surgical Assistant."

	Shock.	Concealed Hemorrhage
Respiration.	Rapid.	Marked and increasing "air-hunger."
Pulse.	Rapid and weak.	More and more rapid and weak.
Effect of intravenous infusion.	More or less lasting.	Transitory.
Effect of other stimulants.	M [illegible] g.	Transitory.
Temperature.	[illegible] e	Often markedly normal.

Insensibility, or loss [illegible] s, may be caused by—

Syncope or fainting.
Shock or collapse.
Hysteria.
Asphyxia or suffocation.
Injuries to the brain.
Epileptic fits.
[illegible] xy.
[illegible] lic intoxication.
[illegible] ic poisoning.
Sunstroke.
Freezing.

Syncope, or fainting, is caused by an insufficient supply of blood to the brain, due to partial paralysis of the heart. Remove all tight bands and constricting clothing. Keep the patient flat on his back, with feet elevated. Dash cold water on the face. Hold smelling salts to the nostrils and give stimulants.

Apoplexy is due to the bursting of a diseased blood-vessel into or on the surface of the brain, causing compression of the brain. It occurs most frequently in elderly people. Elevate slightly and apply cold to the head. Loosen all clothing. Apply heat to the feet. Give no stimulants, fluid, or food of any kind by mouth and secure a physician as quickly as possible.

Heatstroke.—There are two varieties—heat exhaustion and heat stroke. The former is a condition of extreme prostration, collapse, and sometimes delirium, caused by prolonged exposure to a high temperature. It may occur at night or in any season of the year. In heat exhaustion the temperature may be subnormal and stimulants and hot baths are frequently needed.

Sunstroke, or *thermic fever*, occurs as the result of exposure to the sun rays while taking active exercise or doing hard physical work. Persons addicted to alcohol are more susceptible than others. Death may occur instantly or in a very short time, the patient remaining in a condition of coma till death occurs. Temperature may reach 108° to 110°F.

In *thermic fever* the temperature should be reduced as rapidly as possible by ice-baths, ice-packs, or ice-water enemata.

Drowning.—The treatment is first directed to filling the lungs with air and trying to force the blood on through the left side of the heart. The mouth is cleared of mucus with the finger, the tongue drawn forward, and the clothing removed, keeping the patient on the left side if possible. Depress the tongue with the curved forefinger, turn the face downward, slap between the shoulders to remove as much of the accumulated water and obstruction to breathing as possible. Keep the tongue drawn forward and secured in some way and commence artificial respiration by Sylvester's method. The arms are drawn away from the sides and upward, so as to meet over the head. They are then brought down to the sides and the elbows made to almost come together over the chest. These movements are continued at about the rate of sixteen to a minute, or the rate of normal respiration, till respiration is established or till pulse and respiration have ceased for an hour.

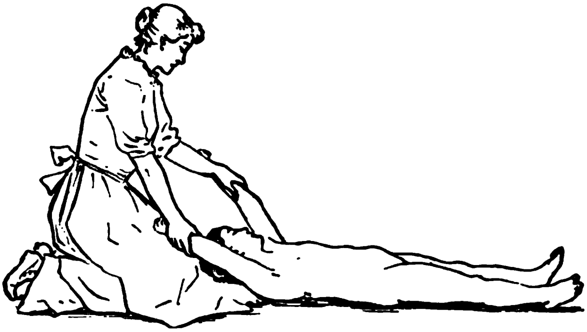

FIG. 172.—Resuscitation after drowning: first movement (Griffith).

A modification of Sylvester's method is recommended by various medical authorities. It is believed that sudden, forcible pressure on the lower ribs, combined with the arm movements, is more effective in clearing the air passages and that a larger amount of air is thus secured. In the prone method of artificial respiration the patient lies on his stomach with face turned to one side. The operator sits at one side and places a hand o [illegible] ibs, letting the weight of the upper part of [illegible] ewhat suddenly on the patient, compressing [illegible] and abdomen. These sudden, forcible move [illegible] ted about twelve times to the minute.

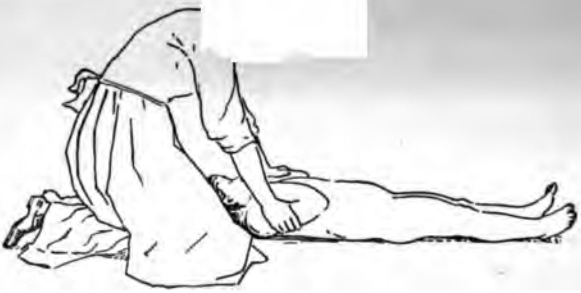

FIG. 173.—Resuscitation after drowning: second movement (Griffith).

Smelling salts are helpful in encouraging breathing. Friction, warm blankets, and external heat are needed when the breathing has started.

A **sprain** is the straining or tearing of the ligaments and capsule which surround a joint by a sudden twist. It is sometimes termed a partial dislocation.

Treatment.—Put the part at rest. If an arm, support in a sling. If a leg, apply a splint and keep it slightly elevated. The pain may be removed by the application of either heat or cold. In all such cases the injured tissues take from two to six weeks to repair.

Gibney's method of strapping with adhesive strapping has been generally adopted as the best method of dealing with sprained ankle. In the later stages passive motion and massage are used. Hot-air treatments are helpful in many such cases.

Poisoning.—The general treatment when the cause of the poisoning is known is to remove the unabsorbed poison as quickly as possible from the system by the use of emetics and quick-acting cathartics; to counteract depression or shock by heat, stimulants, etc., and to relieve pain by the administration of sedatives and demulcent drinks. Emetics may be mustard, a tablespoonful to a tumbler of water; salt, two tablespoons to a tumbler of water; tepid water in copious draughts, or tickling the throat with the finger or a feather. Apomorphin is often given hypodermically when the patient is unconscious or when very quick action is required. Cathartics frequently used are castor oil and Epsom salt.

Stimulants used are aromatic spirits of ammonia, one-half to a teaspoonful in water, brandy, or whisky; strong tea or coffee, hot and cold douches alternately. If the patient cannot swallow, give a stimulating enema.

Demulcents are non-irritating fluids which soothe the internal irritation and help to relieve pain. Among these are milk, white of egg and milk, flour and water, arrow-root, flaxseed tea, olive oil, and gruel.

Food Poisoning (*Ptomaine Poisoning*).—The prominent symptoms are usually those of acute gastro-intestinal irritation, agonizing pains, cold sweats, sometimes chills, and rigorous and extreme prostration. In meat or fish poisoning, occurring as the result of putrefactive changes in the food, the change may be imperceptible to the individual. It occurs frequently in canned goods as the effect of chemic action on the food from muriate of tin or zinc. Foods cooked and allowed to stand in brass or copper vessels which are not absolutely clean has caused severe poisoning and death. Poisoning by ice-cream made in large quantities is one of the common forms of ptomaine food poisoning.

To get the offending substance out of the system is the first step. Washing out of the stomach, castor oil by mouth, and irrigation of the colon are the chief measures relied on for this. Other treatment is symptomatic.

Foreign bodies in the nose or if firmly lodged in the ear will do less harm if let alone till a physician can extract them than if tampered with by unskilled hands. Warm glycerin and oil in the ear, followed by irrigation with warm soapy water, may be tried. A sniff of pepper to excite sneezing will sometimes dislodge a foreign body from the nose, but poking of hairpins or similar instruments into either cavity should be avoided.

If in the throat sometimes the object may be reached with index-finger, but car [illegible] d not to push it further down.

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SECTION IV

PHYSICAL THERAPEUTICS, MASSAGE, NURSING IN NERVOUS AND MENTAL DISEASES

CHAPTER XXXII

PHYSICAL THERAPEUTICS

Physical therapeutics (physiotherapy) is a term used to designate the use of natural forces, such as heat, light, air, water, exercise, etc., in the treatment of diseases.

It includes the sciences of hydrotherapy, thermotherapy, radiotherapy, alimentotherapy, psychotherapy, mechanotherapy, electrotherapy, phototherapy, climate, etc.

Hydrotherapy includes the use of water in any of its three forms—liquid, ice, or steam—in the treatment of disease. No other remedy admits of such a variety of application. Water is regarded by eminent authorities as being more nearly a universal remedy or panacea for all human ills than any other agent.

The value of water as a remedial agent is due to—

1. Its great power for absorbing and communicating heat.
2. Its solvent properties.
3. The facility with which it may be changed from liquid to ice or steam.

In the body water is the most abundant substance, composing about two-thirds of the body weight. The circulatory system is dependent on it to float the various nutritive elements and convey them to the tissues that demand them. It is constantly passing out of the body through the expired air, the skin, kidneys, etc., and thirst is nature's call for a fresh supply.

The remedial, or therapeutic, properties of water may be summed up in the following: Antiphlogistic, tonic, antispasmodic, anodyne, anesthetic, styptic, dissolvent, eliminative, laxative, emetic, and alterative.

Antiphlogistic properties of water are recognized generally. It may be used either cold or hot, preference usually being given to cold, in the treatment of local inflammation.

Tonic and Stimulant Properties.—Increase in circulation and temperature may be quickly produced by a full hot-bath. A quick, cold plunge under proper conditions has also a tonic effect.

Sedative Properties.—Cold or tepid water, properly used, is one of the most effectual methods of lowering functional activity. Few, if any, sedatives are more powerful in lowering temperature, slowing the pulse, and allaying restlessness.

Antispasmodic Properties.—As an antispasmodic water has proven its value in infantile convulsions, hysteria, puerperal eclampsia, and other affections of the nervous system.

Anodyne Properties.—In the relief of pain few remedies admit of so varied an application or are as effectual. Hot water applied in the form of fomentations acts by softening the tissues, dilating the capillaries, and relaxing the tension.

Anesthetic Properties.—Applied in the form of ice, water acts as a local anesthetic.

Styptic Properties.—Hot or very cold water applied to a wound is one of the most effective means of checking capillary hemorrhage.

Laxative Properties.—By increasing the secretion of the liver and intestinal glands water acts as a natural laxative. Used as an enema it accomplishes the same purpose.

Emetic Properties.—Used at a certain temperature and in sufficient quantity water is a safe and efficient emetic in many cases.

Alterative Properties.—By its removal of waste matter and its effects in increasing functional activity water properly and systematically applied has a marked alterative influence in a great variety of cases.

Internal Uses of Water.—Water taken by mouth cleanses the digestive tract, stimulates peristalsis, and promotes diaphoresis, diuresis, and general elimination of waste matter. To a degree it acts also as a food, quenches thirst, and aids in the reduction of temperature. In the form of cracked ice it helps to relieve vomiting.

Lavage of the stomach is employed in a wide range of diseases, and is now much used to relieve vomiting after general anesthesia. The patient, whenever possible, should sit with the body erect and the nurse in front. The tube, after being placed for a few minutes in boiling water to soften it, enters the mouth and glides along the pharynx till it reaches the esophagus, when efforts at swallowing will carry it into the stomach. The regular stomach-tube has a rubber funnel attached to one end. The funnel is raised above the patient's head and warm water poured in slowly till the patient com-

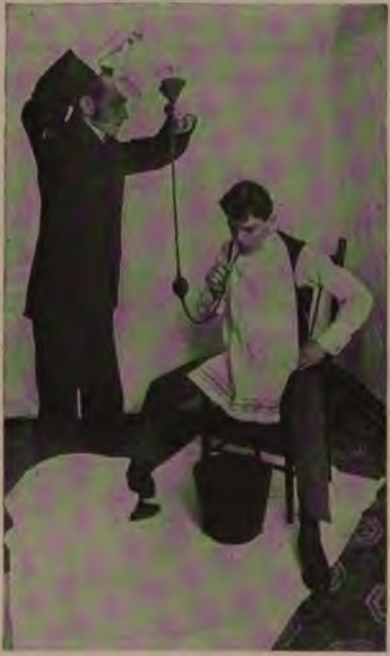

FIG. 174.—Gastric lavage. Irrigation of the stomach (Kellogg).

plains of uncomfortable fullness. The admission of air-bubbles must be guarded against. The funnel is then lowered and inverted, the contents of the stomach siphoned out. The washing may be repeated till the fluid returns clear. If it is necessary to give it to a patient in bed a rubber apron which covers the patient's shoulders can be adjusted around the neck and the fluid drained into a foot-bath beside the bed.

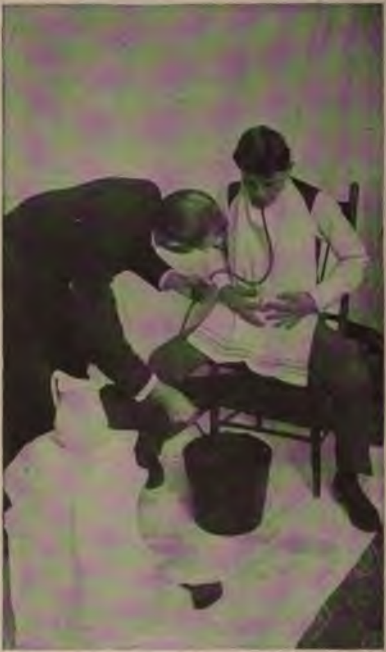

FIG. 175.—Gastric lavage. Emptying the stomach (Kellogg).

Salt solution, or a solution of soda bicarbonate, is frequently used.

Uses.—One of the principal aims in lavage is to prevent the decomposition of stagnant foods, which irritate the stomach walls and give rise to toxic substances. It clears the stomach of tenacious, ropy mucous; cleanses the walls, promotes their contraction, and stimulates the gastric glands to normal secretion of digestive fluids. Lavage is contra-indicated in cases of ulcer of the stomach, in pregnancy, in most diseases of the heart and blood-vessels, after hemorrhages, and in most stomach or intestinal diseases with acute fevers.

Enteroclysis is the injection of a nutrient or liquid material into the bowel. High injections of water are useful in removing putrid material from the intestines and in reducing temperature. In habitual constipation large quantities of water are apt to produce atony of the colon by overdistention, and thus aggravate the disease. In all cases of habitual constipation only small quantities of water should be used.

Saline injections (normal salt solution) stimulate the kidneys and the general circulatory system, promote elimination of putrid or toxic matter, and supply the deficiency of fluids in cases in which there has been an excessive drain on the fluids of the body.

Continuous Enteroclysis.—The slow method of injection, sometimes termed Murphy's method, now used as an important part of postoperative treatment in many cases, has for its chief objects the introduction of large quantities of fluid into the circulation till the vessels are filled, and the dilution of toxic substances. It is used in shock after serious hemorrhage, in case of obstruction of the bile ducts, and in various other surgical conditions in which large amounts of toxic substances in the circulation add to the gravity of the case.

The technic of the slow method is as follows: The normal salt solution is diluted one-half. The irrigating can is hung so as to be only a few inches above the level of the bed. Various methods are used to keep the fluid at a proper temperature. A rubber catheter instead of a colon-tube is used to carry the fluid into the bowel. Only about 4 to 6 inches of the tube is introduced and the fluid is allowed to flow very slowly. From one and a half to two hours or longer is necessary for the treatment. Usually the patient can take a half-gallon of the fluid given in this manner. If there is a desire to expel the fluid, lowering the can will usually relieve the discomfort and permit the treatment to be continued. When the fluid is exhausted the tube should be allowed to remain for a few minutes to guard against the danger of expulsion of the fluid.

This method produces about the same results as hypodermoclysis and is a much less painful treatment.

The *essential principle* in administration of the so-called Murphy treatment is described thus:

"The flow must be controlled by gravity alone; never by forceps or constriction on the tube, so that when the patient endeavors to void flatus or strain the fluid can rapidly flow back into the can. Otherwise it will be discharged into the bed. It is this ease of flow to and from the bowel that insures against overdistention and expulsion on to the linen." Dr. Murphy is quoted as saying that "when the nurse complains that the solution is not being retained, it is certain it is not being properly given."

Hypodermoclysis is the introduction of fluids in large quantities into the subcutaneous tissues. It may be performed with a large, hollow needle (similar to an antitoxin syringe-needle) and an ordinary fountain-syringe. The skin, needle, and fluid should be aseptic. The injection is given in a part in which there is considerable subcutaneous tissue. The quantity varies with the age and condition of the patient. The temperature of the fluid is usually from 100° to 105°F.

General physiologic effects of a saline infusion may be summed up as follows:

1. Heart stimulation.
2. Regeneration of red blood-corpuscles.
3. Increased arterial tension.
4. Increased diuresis and general elimination.
5. Dilution of toxic substances in the blood.
6. Improvement in the general condition of the patient.

It has been found that by increasing the volume of circulating fluid in the body the "red corpuscles are made more efficient as oxygen carriers, partly owing to the fact that the bulk and velocity of the circulation are increased and partly because the corpuscles are kept from stagnation in the capillary area."

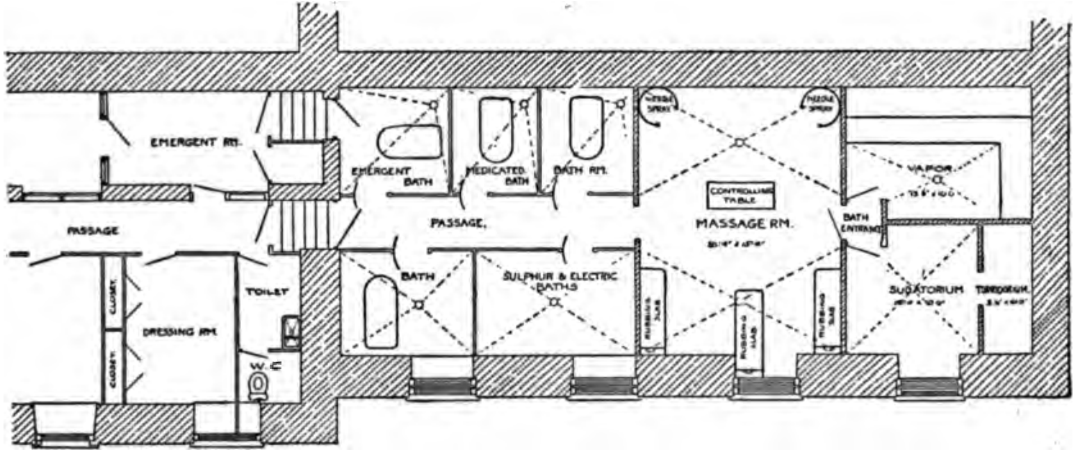

FIG. 176.—Plan showing arrangement of rooms used for hydrotherapeutic treatment at Bellevue Hospital, New York City.

EXTERNAL USES OF WATER

Water is applied to the body externally chiefly in the form of liquid or ice. Steam or vapor applications externally are rarely used.

Water is used externally chiefly for three reasons, besides ordinary cleanliness—for tonic purposes, to supply heat to the body, or to abstract heat from it. The element of temperature enters largely into all such treatments. Therefore, one of the first essentials in the success of water treatments externally is accuracy regarding the temperature of the water and the surrounding atmosphere. Hydrotherapy based on guess work regarding temperature can never be expected to produce the best possible results.

TEMPERATURE OF BATHS

Cold	33° to 60°F.
Cool	60° to 70°F.
Temperature	70° to 85°F.
Tepid	80° to 92°F.
Warm	92° to 98°F.
Hot	98° to 115°F.

Conditions which influence effects are:

1. The degree of temperature of the application.
2. The amount of evaporation accompanying the bath.
3. The force of the stream.
4. The duration.
5. The temperature changes during the bath.
6. The after-treatment.
7. Individual idiosyncrasy.

Effects produced by baths or applications are either stimulating or sedative. A neutral bath, given with water at the temperature of the body, is not followed by reaction. Its general effect is restorative and sedative.

Excitant, or stimulating, effects are produced by both hot and cold applications. The primary effect of both heat and cold is excitant. In their reaction, or secondary effects, prolonged hot baths are sedative, depressant, and weakening. A short hot bath is stimulating and the depressant effects largely absent. In a partial bath, in which the patient's limbs and hips are exposed to the heat, the stimulating effects are less than in the full bath, but the after-effect, or reaction, is a tonic.

Cold baths are stimulating at first. The secondary effects are invigorating and tonic. Prolonged cold baths, while at first stimulating, are sedative in their reaction, due to the lowering of temperature and exhaustion of the nerve centers from prolonged stimulus.

Alternate applications of heat and cold are stimulating and the strongest excitant effects are produced by this method. "By a short application of heat, immediately followed by an application of cold of equal length, the heat impression is made of only sufficient intensity and length to produce the desired nervous impression, any further effect being prevented by the neutralizing influence of the succeeding cold application, which restores the normal temperature of the skin, and thus prepares it for the new excitant impression to be produced by the succeeding hot application. This renders possible an almost indefinite extension of the effect. Although the strongest excitant effects may be obtained by the alternate douche, very powerful excitant effects may be made by alternate hot and cold sponging, compresses, affusion, etc."[1]

Evaporation is the process by which a liquid or solid substance is carried off in vapor, or the process of expelling moisture. It is a cooling agent.

Alcohol added to water applied to the body hastens evaporation, and a strong current of air from an electric fan renders evaporation still more rapid. The evaporating sheet is used chiefly in fevers, and the patient should be gently rubbed continuously during its application.

Friction during cold baths aids in heat elimination by maintaining a vigorous surface circulation. Kellogg says, "The greatest benefit derived from the cold bath is not the simple heat abstraction, but the general rousing of the vital powers, the increase of resistance, and the quickening of the recuperative and reparative activities of the body. Another advantage of using friction is that the patient is much more comfortable in the bath, and will tolerate the application for

[1] "Rational Hydrotherapy." (Kellogg.)

a longer time and at a lower temperature, as well as more frequently, than when it is administered without friction."

The effects of a cold bath are produced in two ways. It contracts the muscular coats of the small blood-vessels by its influence on the sympathetic nervous system. Thus the circulation is lessened and the vital function for the time restrained. The oxygen being regulated and distributed by the blood, it follows that with a decreased circulation there is a decrease in heat production. This affects temperature also, though the prolonged application of water to the whole body or a part acts in another way. Water, having the property of abstracting heat from surrounding objects, its application for a sufficient length of time to the surface of the skin at a lower temperature than the body must result in the extraction of heat. Through the sympathetic nervous system cold water applied to the surface of the skin for any considerable period, besides contracting the coats of the small arteries, has a similar effect on the muscular tissue of the heart, lessening the rate of its contractions and slowing the pulse.

The tonic effects of a cold bath of short duration are produced by a vital reaction. The sudden plunge into cold water excites to activity the nerve centers, controlling the circulatory and heat-producing functions.

The **hot bath** acts by relaxing the muscular coats of the smaller blood-vessels. The superficial vessels dilate and become more active. The rapidity of the circulation is increased, creating a general demand for more blood, and thus increasing the heart action. The volume of blood in the deeper tissues is diminished, hence congestion is relieved. The temperature of the body is at first increased, but after free perspiration it is lowered.

When the hot bath is prolonged cerebral symptoms are produced as the result of excessive heat, which causes a large amount of blood to be forced into the superficial vessels. For this reason it is desirable to apply an ice-cap to the head during such treatments.

The **Scotch douche** is a term used to designate the alternate application of hot and cold water, the changes occurring in rapid succession. "The more sudden the change and the greater the extremes of temperature employed the more pronounced will be the effects. The hot application is relatively long (one to four minutes) and the cold application must be short (three to thirty seconds)." This treatment may be local or general. The temperature should be carefully regulated in every case. Beginning at a temperature of about 100°F., it is gradually raised to 110 to 120°F. and held there as long as the hot spray is continued.

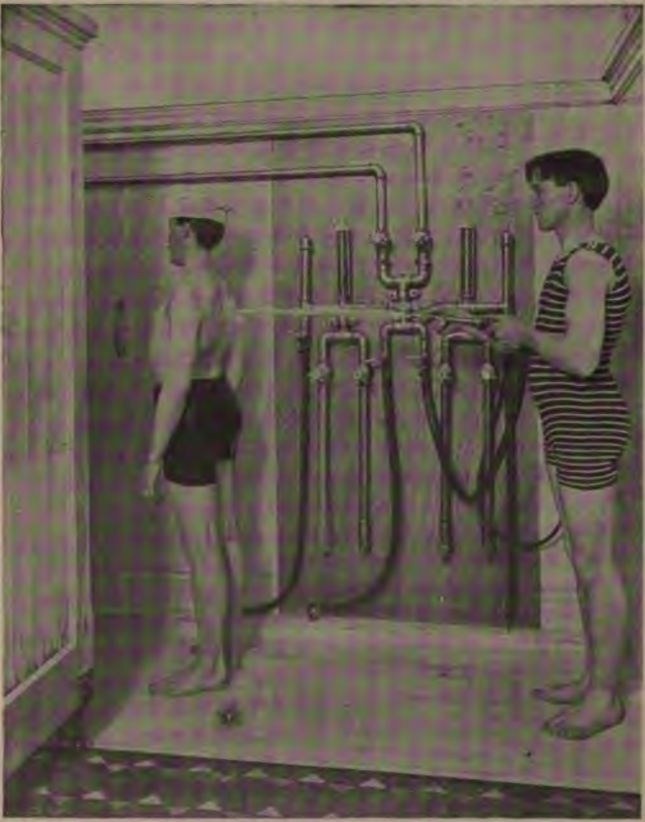

FIG. 177.—Spinal douche (Kellogg).

The **spinal douche** is used chiefly for "its influence on the central nervous system and through its effects upon the vasomotor nerves to influence the system at large. The cold percussion douche produces a sense of buoyancy and increased energy. The tepid douche calms excitability of spinal origin. The cold percussion douche to the spine is used with beneficial effects in cases of nervous exhaustion."

The Scotch douche to the back is one much employed in chronic kidney diseases and various other affections. It may be given by affusion (pouring) or by means of a hose. Alternate spinal sponging, using water as hot as can be borne, and alternating it with rubbing with ice, produces similar effects. The Scotch douche is a treatment that can be carried out without an elaborate apparatus and is applicable to a wide range of conditions. It has been employed with much success in cases of relaxed or paralyzed muscles, sciatica, neuralgia, chronic backache, and certain joint affections.

Immersion baths are baths in which the whole body is immersed in a tub of water. In these baths very pronounced effects from the result of the heat or cold are produced. In giving the hot immersion bath it is customary to have the water a little cooler at the beginning than the prescribed temperature and to gradually raise it. These baths are given in certain forms of kidney affections, in insomnia, and occasionally to relieve skin irritations. Where an ice-cap is not available cold cloths should be applied to the head. The duration of such baths varies from five to twenty minutes. If a tonic effect is desired hot immersion baths should be followed by a quick spray of cool water or a cool sponge. This form of tonic treatment is rarely prescribed for invalids. If the eliminative effect is desired a quick drying of the body with friction and wrapping in a warm blanket are important parts of the treatment. If the effect on circulation is desired the same after-treatment is applied as for eliminative effects.

Shallow baths, or partial baths, in which a part of the body only is under water, have similar effects to the full bath, only less marked. In partial baths friction to the uncovered portion of the body, either pouring water on it or using a wet towel, are commonly practised.

Spray baths are usually tonic in their effects. They may be taken while sitting in a tub, the spray being directed against the body by the nurse (the head being usually excluded from the treatment), or with the patient standing. In such baths the skin is exposed to the air and evaporation is rapid. The effect of the air has much to do with the tonic effects.

CHAPTER XXXIII

PHYSICAL THERAPEUTICS (Continued)

The theory and technic of hydrotherapy is a specialty which can only be taught properly by those who have made a special study of both the art and the science. While water is the most ancient of all remedies, it is only within the last half century that the science has been established on a rational basis. The credit for rescuing this branch of the medical art from the hands of empirics and quacks and building a sound foundation of scientific principles which should govern the practice belongs largely to Winternitz, of Vienna. In America, Simon Baruch, of New York, was the chief pioneer in directing the attention of the medical profession to the value of this form of treatment, the importance of which is more generally recognized every year. The study is one which nurses may profitably follow so long as they are in active nursing practice.

The **cold immersion bath,** or friction bath (also termed Brand bath), is recognized as one of the most useful methods of using water in typhoid fever. It can, however, rarely be carried out in a private home, owing to the absence of a proper tub for full immersion, and is objected to by many physicians as an unnecessarily severe form of treatment in most cases. The portable bath-tub is brought to the side of the bed, with water at a temperature of 65° to 70°F., sufficient for immersion. The face and head are cooled previous to going into the bath. The patient is lifted by two attendants into the tub. The head and shoulders are supported above the water and the head is wrapped in a towel wrung out of ice water. The patient is rubbed vigorously during the whole bath. Water is poured over the chest and head. Such a bath is continued from ten to twenty minutes unless there is cyanosis and marked shivering. When the patient is removed from the bath he is wrapped in a sheet, covered with a blanket, and heat is applied to the feet.

Physiologic effects of a properly given bath of this kind are enumerated by Kellogg as follows:

"1. General vital resistance is increased.

"2. The nerve centers are energized.

"3. Muscle tone or excitability is increased.

"4. Activity of the kidneys, liver, and skin is increased.

"5. The amount of oxygen received is increased.

"6. There is marked increase in the blood pressure.

"7. The pulse is slowed.

"8. The heart is energized.

"9. The number of blood-corpuscles in the circulation is increased, especially white corpuscles.

"10. The circulation is improved in a number of ways.

"The friction applied aids the reaction by dilating the vessels of the skin, prevents shivering, and assists heat elimination. The rubbing must not be too violent, as vigorous rubbing will have a tendency to excite heat production."

The **wet-sheet pack** is one of the most frequently used of all hydrotherapeutic procedures, and is much preferred to the immersion baths in typhoid fever. It has proven of great value in pneumonia and in nervous and kidney disorders, and is applicable to a wide range of conditions. It may be applied hot or cold or neutral, different effects being produced by the temperature and duration of the treatment.

The bed needs to be protected by a rubber mackintosh or a thick quilt or blanket folded several times. One sheet folded in two or three thicknesses is wrung out of water at the desired temperature and placed under the patient and another over him. The arms may be wrapped in large towels. In cases of fever, when the cold pack is used heat should be applied to the feet and an ice-cap to the head. The pulse should be carefully watched, and if signs of faintness be noted the patient should be removed from the pack at once. In some cases if the sheet becomes warm from the heat extracted from the body it may be necessary to shower cold water from a sprinkler over it. From twenty to forty minutes is the average time for this pack. For the reduction of temperature short packs applied at frequent intervals are better than long ones at greater intervals. When the hot pack is desired blankets are used. These are wrung out of hot water several degrees higher than it is desired to apply the pack, as it cools rapidly. Over this spread quickly heavy blankets or quilts

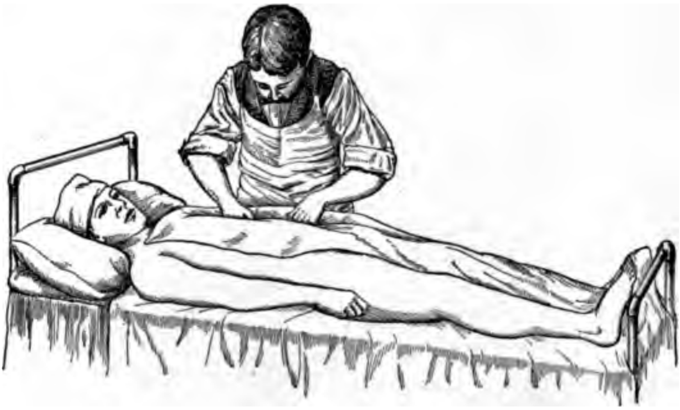

FIG. 178.—Application of the cold pack: pressing the sheet between the patient's arm and body (Stoney).

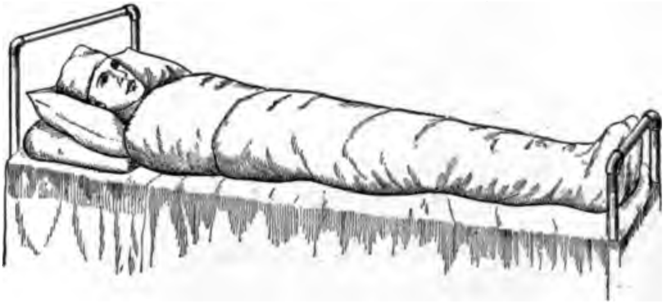

FIG. 179.—Application of the cold pack: patient completely covered, with wet towel on the head (Stoney).

and, if necessary, use dry heat. A cold compress should be applied to the head.

The **shower-pack** is used chiefly when antipyretic effects are desired. Instead of removing the sheet for rewetting the water is poured on from a sprinkler. Kellogg says that the shower pack can be made almost as powerful in reducing fever as the Brand bath and is "especially suited to cases in which the temperature is persistently high and does not yield to more moderate measures."

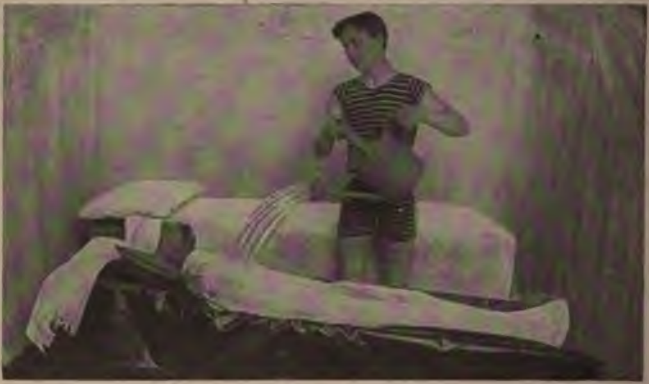

FIG. 180.—Shower-pack (Kellogg).

Chilling.—Kellogg states that chilling in the cold pack is usually due to the fact that at some points the wet sheet is not in perfect contact with the surface. When the cold sheet is brought into close contact with the skin at every point reaction occurs immediately, and the disagreeable effects from chilling are avoided. The sheet can be changed as soon as it reaches the temperature of the body.

Stages.—The stages in the development of the cold pack treatment are, first, the cooling stage; second, the neutral, when the sheet reaches the temperature of the body. This stage is sedative and tends to produce drowsiness or sleepiness. The third stage is the superheating stage, and the fourth the sweating stage, these effects depending on the duration and general management of the treatment.

The cold sheet is employed for tonic effect in various wasting diseases, the treatment being stopped as soon as the second stage is reached or reaction is well established.

The evaporating sheet consists in wrapping the patient in a sheet wrung out of hot water or cold water and allowing cooling by evaporation. The evaporation is frequently aided by vigorous fanning, an electric fan being used for this purpose. Gentle friction is used continuously through the treatment.

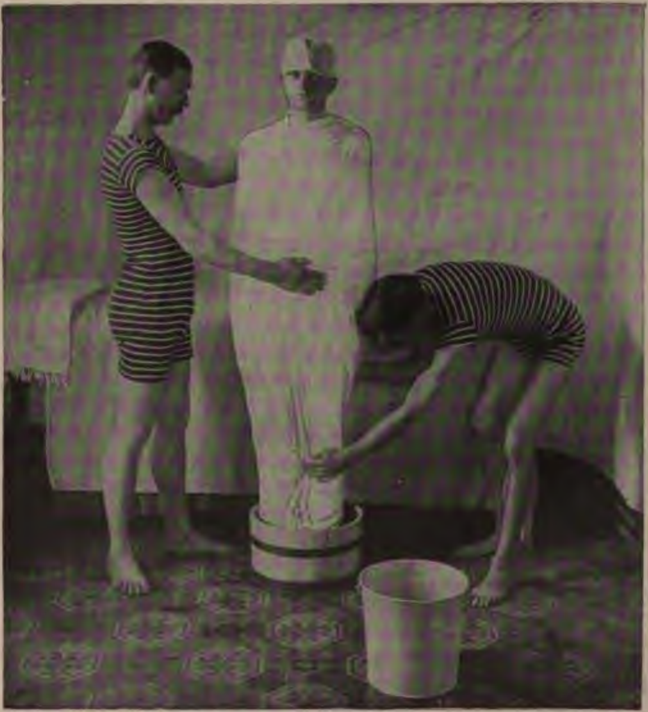

FIG. 181.—Wet-sheet rub (Kellogg).

The **wet-sheet rub** is said to be of special value in cases of general debility where the circulation in the extremities is poor, the skin and liver inactive, and the nervous system weakened. For this bath two large sheets are needed, a tubful and a pailful of water of the temperature desired, usually from 92° to 95°F. Before beginning the bath both sheets should be shaken out and gathered into loose folds so as to be quickly adjusted. Immerse one sheet in the tub and then have the patient step into the tub. The wet sheet should then be drawn up, one corner placed over the shoulder and the remainder quickly drawn around the entire body. It needs to be brought well up around the neck. Vigorous rubbing then begins with both hands, one in front and one behind the patient. The whole body must be quickly gone over. After this rubbing, which should be done in a warm room, a bucketful of water, about five degrees colder, should be poured over the chest and shoulders and another brisk rub follow. Then drop the wet sheet into the tub and, while the patient is stepping out of the water, take the dry sheet and envelop him in it as before, a brisk rub with the dry sheet being executed in the same manner as with the wet sheet till the body is perfectly dry and in a glow. A moderately vigorous hand rub should follow until the skin is cool and free from moisture. Some practice and skill is needed to give this form of treatment as it ought to be given, but its marked tonic effect makes it one of the most valuable of the varied forms of water treatment.

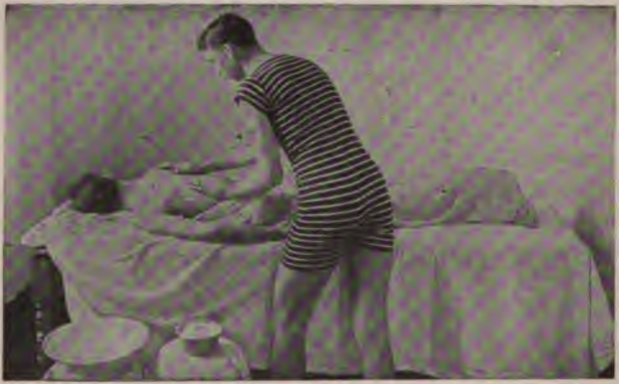

FIG. 182.—Salt rub (Kellogg).

The **salt rub** consists in applying salt, of medium fineness and slightly moistened, to the surface of the body. The amount of pressure needs to be graduated according to the sensations of the patient. Permanent irritation of the skin must be guarded against. The patient may sit, stand, or lie down during the treatment. The salt rub or glow is followed by a spray bath and the patient is rubbed dry. This treatment is often recommended in cases of general debility, dyspepsia, and other conditions in which the skin is inactive. It is valuable for its tonic effects.

Effervescent Baths.—These baths are also termed Nauheim baths. The effervescent baths consist in a full bath in water which contains calcium chlorid, bicarbonate of soda, and carbonic acid gas. The latter ingredient is the most important factor in the cure. The baths are given at the famous health resort, Nauheim, in Germany, in natural mineral waters containing the above ingredients. The effects of these baths are especially desirable in cardiac diseases, though their value is not to be underestimated in nervous and rheumatic affections. In conjunction with the bath treatment for heart diseases a special system of gentle resistive exercises is frequently employed known as the Schott exercises.

Experiments have proven, and Dr. Schott himself has admitted, "that identical results may be achieved by artificially prepared baths containing the same ingredients as the Nauheim waters, the results depending more on the proper manner of administration than on the location. (For formula for Nauheim Baths, see Appendix.)

"The manner of administration is a subject of especial importance if the possible results are to be realized. There is no such thing as a uniform and fixed dosage and, while there are several methods of carbonating the salt bath, there yet remain many methods of giving it. As a rule, the baths are administered in three general grades, the stimulating effects of which are progressively increased by adding, grade by grade, increased proportions of the necessary chemic ingredients. Success next depends upon the minutest attention to details, such as temperature, duration, frequency, and progressive strength.

About 15 gallons of water, or sufficient to immerse the body, is employed, the temperature of which for the first bath to be 98°F. Since a long immersion at this temperature depresses, while a short immersion stimulates, the duration of the first bath should not exceed seven or eight minutes, five minutes being the usual time for starting a series of baths. The same temperature and duration are to be repeated for the second bath the day following, and on the third day the bath is to be omitted. As the series progresses three different changes are constantly occurring. The temperature is gradually lowered to 90°F., the duration is gradually prolonged perhaps one minute each series until a maximum not exceeding twenty minutes is reached. Finally, these changes in temperature and duration are accomplished with a carefully graded increase in the mineral strength of the bath by adding a pound of salt in accordance with the increase of time with each series of baths.

Certain precautions should be observed in giving the bath to feeble patients. It should not be administered to such oftener than every other day at the beginning. If dyspnea, a difficult or laboring breathing, is present upon walking to the bath, first allow the breathing to become tranquil. It is always best to start with the mildest bath at a temperature of 98°F. and limited in duration. The patient must not be allowed to become chilled.

"But what is properly understood by the Nauheim system does not consist of baths alone, but includes the baths as supplemented by various courses of curative exercise, passive, resistive, or active, as indicated by the individual case. Except in cardiac disease massage is often administered as an all-sufficient means of passive exercise. But where the heart is affected and in certain other diseases, the intelligent system of resistive movements devised by Dr. Theo. Schott has been employed for twenty years at Nauheim, with results that have commanded the respectful attention of the medical world."[1]

The **fan-bath** consists in exposing the body to the influence of a current of air set in motion by an electric fan. Cold air only is used. While the fan is in motion the body is vigorously rubbed by an attendant. It is used chiefly for its tonic effect. In some hospitals the fan-bath is regularly employed for reducing temperature in fever, a wet sheet being used over the patient in combination. This bath is regarded by some authorities as a rather dangerous method of treatment, and cases of pleurisy and other respiratory affections have been attributed to it.

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[1] Max J. Walter, M. D., in "The Trained Nurse."

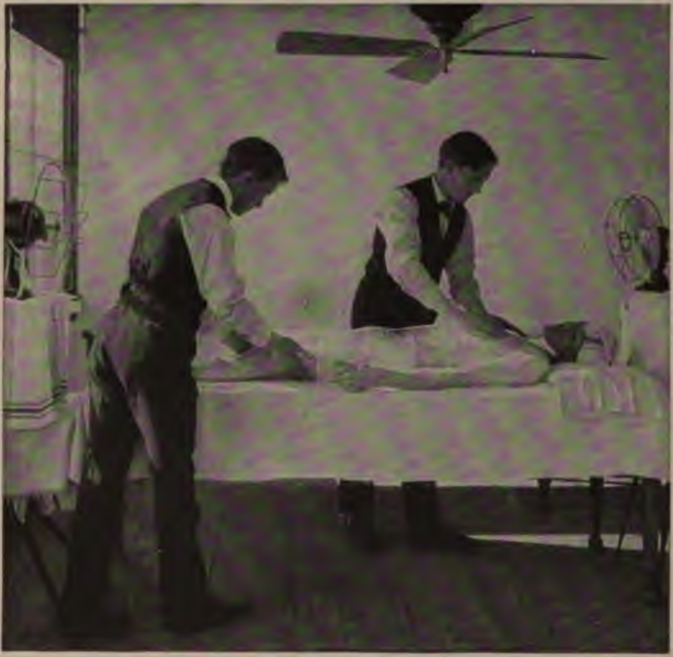

Fig. 183.—Fan-bath (Kellogg).

The **sun-bath** has a stimulating and general tonic effect. The sun is a great source of radiant energy, and one of the most powerful hygienic and curative agents known. The real sun-bath consists in exposing the whole of the body or some special part of it to the direct influence of the solar rays. A sheet of gauze may be used as a protection. In rooms constructed for this purpose the patient lies on a table or cot in front of a window, the head being protected from the direct rays of the sun. The duration of the bath will depend on the condition of the patient and the effects desired. It may be limited to five or ten minutes or continue for three-quarters of an hour. The treatment may easily be overdone.

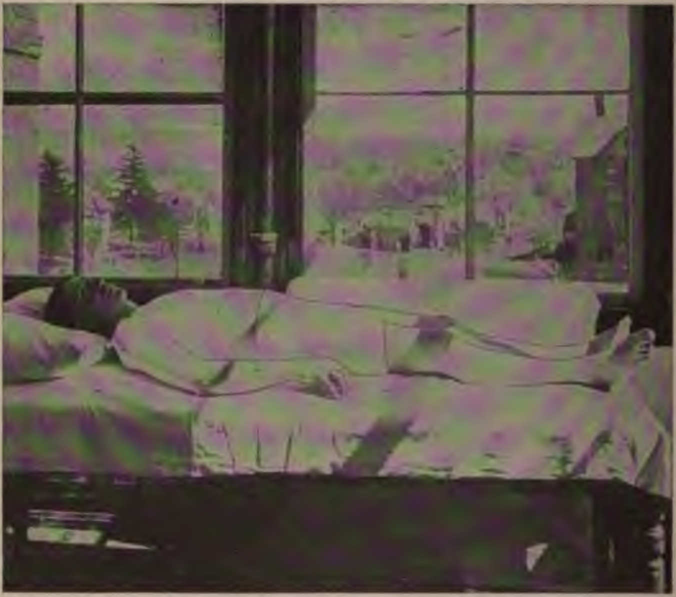

FIG. 184.—Sun-bath (Kellogg).

Open Air and Climate.—While the world in general accepts as a fact that fresh air is one of the great essentials in the prevention and cure of tuberculosis, the curative value of fresh air in other diseases is not so generally recognized. For several years progressive hospitals have been experimenting with the open-air treatment for a variety of other diseases, such as typhoid fever, nervous diseases, sepsis, surgical diseases, and a great variety of acute and chronic ailments. The results in general are said to be a marked increase in weight and hemoglobin, improved appetite and digestion, and a general sedative effect on the nervous system. The question of the value or advisability of a change of climate in different diseases is one which does not specially concern nurses, since they rarely if ever are called on to decide such questions. The careful management of ventilation and the temperature of the sick room is much more important to the nurse. In this connection it may be noted that the tendency is toward a lower temperature in sick rooms in general. In a prominent New York hospital the medical staff by common consent asked to have the temperature of wards reduced from 70° to 65°F. during the day and 60°F. at night, 5° below either of these being considered within proper limits. The results have proved the wisdom of the change. A great many of the leading hospitals endorse this change.

Finsen light treatment, or phototherapy, owes its name and fame to Dr. Niels R. Finsen, of Copenhagen. By means of specially constructed lenses the rays of the sun were concentrated on diseased superficial tissues. The earlier experiments were confined chiefly to lupus, a very common disease in the northern country, in which the treatment originated. Lupus is a disfiguring disease which usually attacked the face, and for which there had been previously no cure. Later, it was found that even more speedy and certain results were produced by the use of the electric light. The Finsen system is much more extensively used in European countries than in America, but each year progressive hospitals are adding the Finsen light to their equipment. In many cases the Finsen light and the Röntgen rays are used in combination in the treatment of carcinoma, lupus vulgaris, eczema, and various skin affections.

The *electric-light bath* combines in itself the advantages of both light and heat. The dosage as to time and intensity can be readily controlled. All the desirable effects of a vapor bath or Turkish bath can be easily and quickly produced in a specially constructed electric-light bath cabinet, and, in addition, the patient is exposed to the actinic or chemic rays with their distinct therapeutic effects according to the color of light used. It is useful chiefly for promoting general elimination and for general tonic effects. In chronic rheumatism, joint affections, kidney diseases, neurasthenia, and a wide range of diseases it has proved its value. It should be followed by water treatment, and massage is often used as an after-treatment. Local electric-light treatments to a part are also much used for the relief of pain and internal congestion.

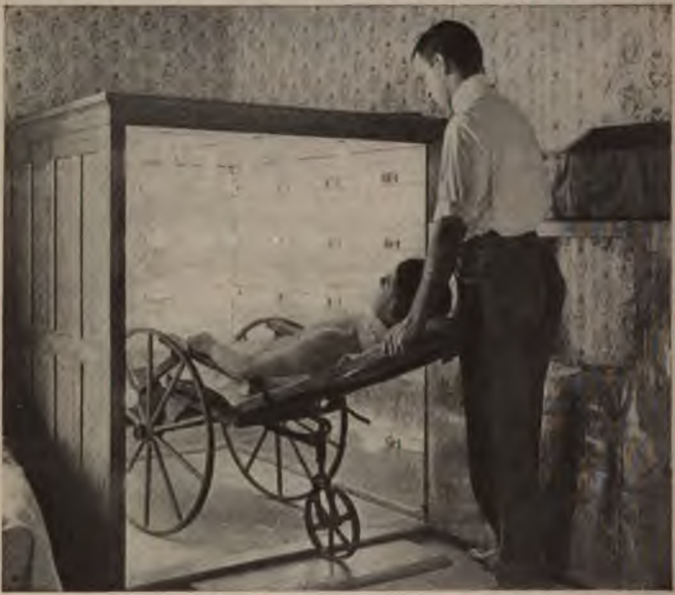

FIG. 185.—Electric-light bath cabinet, open; seventy-two 16-candle power lamps (Max J. Walter, M. D.).

The **hot-air bath (thermotherapy)** consists in exposing the body, or a part of it, to superheated air. It has been used to a degree from time immemorial for promoting skin activity and assisting in the elimination of waste matter. The hot-air baths may be given to a patient in bed by conducting the heat from a lamp or stove placed beside the bed, under the bedclothing, which is elevated by a body-cradle, but such powerful effects are not secured as in the cabinet.

Hot-air machines, which are so constructed that a temperature of 300° to 400°F. may be brought to bear upon a part of the body, are much used. Hot air is very successfully employed in cases of sprains, sciatica, stiff joints from any cause, chronic rheumatism, etc. Usually in these cases it is combined with massage. The limb must be well protected by flannel bandage, free from grease or any oily substance, and dry. The temperature in the machine is allowed to rise very gradually. Among the physiologic effects of such treatments are relief of circulatory stasis, an increase in the blood-supply of the part treated, and in the general nutritive processes, and the withdrawal of fluid. The general effects of the body treatment in hot-air machines are chiefly the stimulation of the organs concerned in elimination and the relief of pain. A patient should never be left alone while taking a hot-air treatment of this kind, and the temperature should be carefully adjusted and all necessary precautions against burns made before beginning the treatment.

Bier's Hyperemia.—A determination of an increased amount of blood to the part of the body it is desired to affect is a comparatively new form of treatment that is proving especially valuable in such cases as chronic arthritis, old sprains, and some joint affections. Passive hyperemia is produced by putting an elastic bandage on the limb. Baking and the vacuum cup are other methods of producing hyperemia. Some excellent results in acute surgical cases have also been obtained from this method. Careful supervision of all cases is required. Regarding the technic and results of this treatment, August Bier, of Bonn, Germany, says:

"The fundamental principle of this method, namely, the curing of various inflammatory diseases, without incisions or drainage, by the simple application of the principle of the vacuum, is a matter which is far-reaching in its significance. The functions of the diseased portions of the body which are successfully treated by this method are preserved to a much greater degree than when they are treated by means of cutting operations of greater or lesser magnitude.

"In making the first application the vacuum cup should be adjusted to the diseased tissues so lightly as to barely adhere; then after remaining in position for five or six minutes it is removed for two or three minutes, being then re-applied as before. This plan is continued for about an hour during the first few treatments; after a time the duration of the treatments being lessened. Only one treatment a day should be given.

"The use of this apparatus is entirely painless to the patient; but both Bier and Klapp have emphasized in their published writings that it should be used with intelligence and caution. Acute inflammatory processes, by virtue of the intense hyperemia which is induced by this treatment, are cured after two or three seances. Abscesses of considerable dimensions require treatment of somewhat longer duration."

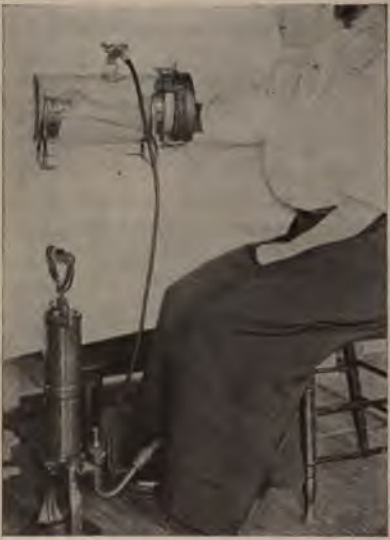

FIG. 186.—Bier's apparatus for the production of artificial hyperemia in the wrist (Max J. Walter, M. D.).

The **cold-air treatment** is being successfully used in pneumonia and various other febrile conditions. The good results are due to the cold air and not to the light, and are secured in a shaded, cold room to which pure, cold air has free access quite as readily as on the roof. The method consists simply in wrapping the patient up warmly, keeping heat to the feet, screening from draughts, and opening all windows.

Breathing exercises, both as preventive and curative measures, are undoubtedly valuable, but their important bearing on the health is far from being sufficiently recognized by nurses. In many, if not most, individuals there are areas of lung never developed, a condition which undoubtedly helps to lower the resistive powers, and in various other ways impairs functional activities. Every nurse should know, practice, and teach, as opportunity arises, some method of chest and lung expansion. A few of the simplest breathing exercises are as follows, and are best taken in front of an open window or outside:

Assume the position of military "attention," heels together, body erect, hands on the sides. With the mouth closed, take slowly a deep inspiration, breathing in all the air possible, and while doing so raise the arms laterally to a horizontal position. Remain thus, holding the air inhaled for about three seconds, and while exhaling through the mouth bring the arms down to the original position. The act of exhalation should be a little more rapid than the inspiration. When this exercise has been repeated nine or ten times, and at frequent intervals during the day for some weeks, the second exercise may be attempted. This is the same as the first, except that arms are moved sidewise and upward till they meet over the head.

The third exercise consists in taking the same position for the body and stretching the arms outward and backward till the back of the hands touch each other. A fourth exercise consists in making a backward, rotary movement of the shoulders while taking a deep inhalation, and moving the shoulders forward to the normal position while exhaling. The regular systematic practice of even these simple forms of lung gymnastics will accomplish much in not only expanding the chest and lungs, but will help the digestive and elaborating organs through the exercise of the abdominal muscles and diaphragm. The practice of relaxation, repose, and restfulness of body and mind can profitably be combined with deep-breathing exercises, the individual lying flat on the back without a pillow and gradually filling the lungs to their fullest capacity.

The Rest Cure.—Rest as a therapeutic measure is of first importance in a very large number of affections. In surgery rest for the affected part is the rule to which there are very few exceptions. It holds good up to a certain point in most diseases. It has proven of great value in neurasthenic conditions. As generally practised to-day, it includes, besides complete rest in bed [illegible] ing, massage, electricity, isolation, etc., and t [illegible] c methods in overcoming certain diseases.

The Work Cure.— [illegible] ence with various classes of chronic invalids h [illegible] the work cure is as often needed as the rest c [illegible] re is in properly selected work for invalids, s [illegible] gent of no mean value. Much studying is be [illegible] e subject of occupational therapy at the present time.

A physician's prescription for occupation treatment reads somewhat as follows:

"Mrs. X. Room 50.
Light occupation in bed.
Basketry or knitting.
Not more than one hour daily.
———, M. D."[1]

Attention should be given to the character of the work "whether it requires little or much physical strength, whether it should stimulate the creative powers or be of a restful monotony" etc., and of the general effects on the invalid both mentally and physically.

Psychotherapy.—This term has been used to include the use of mental impression, suggestion, and the reëducation of the patient as a means toward recovery of health. Its chief field of usefulness is in connection with functional nervous diseases and other diseases in which nervous diseases may be associated. The exact mode of application of the principles of psychotherapy must vary with the physician, the patient, and the general needs of individual cases. Its proper use requires a study of each patient in his own environment, the mental influences which are brought to bear upon him from day to day, and the removal as far as possible of conditions which react unfavorably. Prolonged training is frequently necessary to enable the patient to overcome abnormal fears, apprehension, worry, etc. The personality both of physician and nurse are of special importance in the success of this remedial method. The subject of psychotherapy is one which is to-day demanding more study than has ever been given to it. Two books of special value in this study are The Law of Psychic Phenomena, by Hudson, and The Psychic Treatment of Nervous Disorders, by Dubois.

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[1] Hall and Buck in "The Work of Our Hands."

Those who are recognized authorities in this field assert that at the bottom of many ailments, especially those of a functional character, is the condition of *fear*. The four characteristics so commonly met with in invalids especially those in which there is a strong nervous element complicating or causing the disorder are: exaggerated sensibility, sensitiveness, impressibility, and emotional hysteria. At the bottom of them all Dubois places fear as the immediate cause. "Fear creates dependence on others, the desire for direction, consequently for suggestibility; it engenders an unwillingness for the slightest exertion; it opens the flood-gates of emotion. The hypochondriac of every kind is afraid of disease, and the melancholiac is obsessed with fixed ideas of ruin, disgrace and incurability. It is above all important to give such patients confidence in themselves to teach them to be their own masters."

Persuasion and Suggestion.—Dubois makes a very decided distinction between persuasion and suggestion "To employ persuasion" he says, is to imbue one's patient with an idea which one believes in oneself; to communicate a conviction which one holds completely, to offer him a psychological treatment that one would apply to one's best friend or even to oneself."

"To employ suggestion is to capture either entirely or in part the confidence of the subject, to set before him an idea that I have no doubt would cure him, but that has not the same form in the mind of the patient as in that of the physician. Here we have a professional lie, a justifiable lie, perhaps. I create between persuasion and suggestion all the difference that exists between a good piece of advice and a practical joke."

"*Self-education* is precisely the mastery which we ought to teach our patients to make them less open to suggestion and more open to reason." The discovery of the working of the subjective or subconscious mind as distinguished from the objective or conscious mind has done much to put the practice of psychotherapy on a rational basis and this discovery enters into the whole system of mental treatment.

CHAPTER XXXIV

MASSAGE

MASSAGE is the science and art of applying friction and intermittent pressure to the muscles and other accessible tissues of the body. Massage in some crude way has been practised from time immemorial by both savages and civilized people. The instinct is in all of us to use pressure, stroking, or rubbing to relieve an injured part. The child who falls and bruises his head instinctively runs to his mother for sympathy and relief, and she instinctively rubs and strokes the part. If a nerve is injured pressure and warmth are instinctively used to relieve it. That the value of rubbing was appreciated by Hippocrates centuries ago is shown in this statement: "The physician must be experienced in many things, but assuredly also in rubbing; for things that have the same name have not always the same effects; for rubbing can bind a joint that is too loose and relax a joint that is too rigid."

There is a wide difference between scientific massage and rubbing, and much that is called massage might better be termed rubbing. To give massage in a scientific manner requires a more thorough knowledge of anatomy than the ordinary nurse possesses. It requires also months of unremitting study and practice under the supervision of a thoroughly skilled instructor. It cannot be acquired from books, nor by seeing a few demonstrations. The average hospital cannot devote the time necessary to give a thorough course in massage, such as will make of its nurses skilful masseuses, but an elementary study of the subject accompanied with demonstrations of the different movements is now regarded as a necessity in every up-to-date training-school. Skilful rubbing and massage are an important part of the treatment of a great variety of diseases, and the nurse who is ignorant of the general principles of this treatment is insufficiently equipped to meet the demands of the modern progressive physician. The elementary study of the subject may profitably be followed by a thorough scientific course in later years.

Massage is derived from the Greek word masso, to knead or handle. It signifies a group of procedures accomplished with the hands and applied to the external tissues of the body, with a distinct physical or physiological purpose in view.

Movements which may be active or passive, resistive or assistive, are often combined with massage, and these are often spoken of as the Swedish movement treatment.

The **objects of massage** have been stated as follows:

1. To improve the functions of the skin.
2. To increase and equalize the circulation and quicken the flow of blood and lymph, thereby promoting general nutrition.
3. To attract the blood to the surface from congested parts.
4. To promote the nutrition of a part.
5. To promote elimination of waste material.
6. To break down adhesions and to promote the absorption of inflammatory products.
7. To vitalize and restore the nervous system.
8. To improve appetite and digestion and relieve constipation.
9. To strengthen the muscles and stimulate all the vi functions of the body.

Contra-indications.—Massage is contra-indicated in affections, wounds, and specific eruptions.

In inflammation in which pus is present

in which there is risk of diffusing the virus into healthy tissue.

In all acute diseases of bone.

In certain affections of the blood-vessels or lymphatic system.

In all cases in which there is a clot in the blood-vessel, massage or rubbing may result fatally by dislodging the clot and setting it free in the circulation.

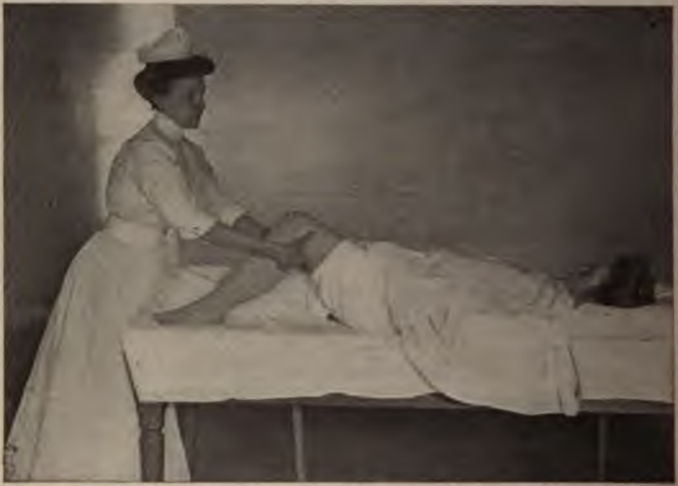

Fig. 187.—Digital friction in popliteal space (Max J. Walter, M. D.).

In typhoid fever, gonorrheal rheumatism, certain stages of tuberculosis, glandular enlargement; in acute peritonitis, appendicitis, gastric ulcers, or enteritis, or any severe constitutional disease in which rest is necessary.

In all affections in which there is liability of hemorrhage from pressure.

In pregnancy and during menstruation, as a rule.

Indications.—Massage should be used only under the order of a physician. It has proven of great benefit in cases of hysteria, neurasthenia, mental diseases, paralysis, rheumatic and traumatic contractions of joints; in fractures to hasten absorption of callous masses; in swellings resulting from sprains and contusions; in torticollis to relax muscular contraction; in constipation, atonic dyspepsia and gastric dilatation; in all forms of muscular atrophy; as a general stimulant and tonic in cases of prolonged muscular inactivity, whether from indolence, wasting disease, or prolonged use of splints or braces. It is used as a tonic in convalescence from many diseases, in which during the acute stage it is contra-indicated. Each year its field of usefulness widens.

Methods of application have been termed effleurage—slow and gentle stroking performed either centripetally in the direction of the venous blood current or centrifugally in the direction of the arterial blood current.

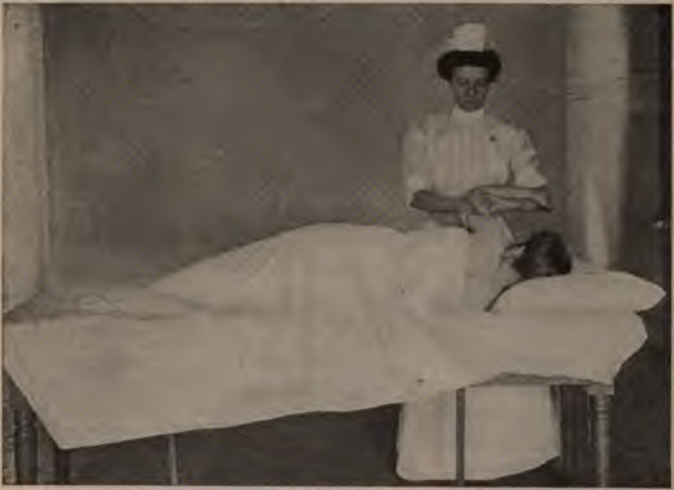

FIG. 188.—Pétrissage of upper arm (Max J. Walter, M. D.).

Friction or deep rubbing movements.

Pétrissage or kneading, a grasping, compressing and relaxing of muscular tissue.

Tapotement or percussion.

These terms are apt to cause confusion rather than clearness in the minds of inexperienced students, and are mentioned here only because sanctioned by custom.

Practically all subdivisions of massage can be grouped under seven heads:

Touch and pressure.
Stroking.
Kneading.
Friction.
Percussion.
Vibration.
Joint movements.

Each of these may be gentle, moderate, or firm.

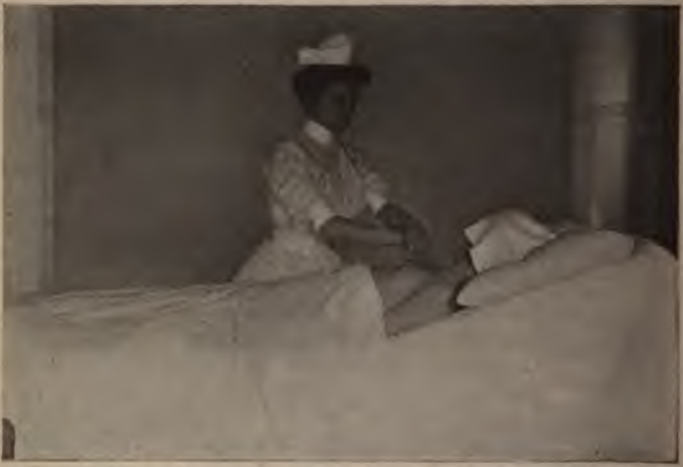

FIG. 189.—Circular friction of upper thorax (Max J. Walter, M. D.).

General Principles.—1. All of the movements should at first be used moderately, then gradually increased in force and frequency to the fullest extent desirable, and end gradually as begun.

2. The greatest extent of surface of the hands and fingers of the operator, consistent with ease and efficacy of movement, should be adapted to the surface worked upon in order that no time be lost by working with the ends of the fingers or one portion of the hands when all the rest might be occupied.

3. The manipulator if too near the patient will be cramped

in his movements; if too far away these will be lacking in energy, indefinite, and superficial.

4. The patient should be in an easy and comfortable position, with joints midway between flexion and extension, in a well-ventilated room of 70° to 75°F.

5. The direction of the movements depends on the nature of the ailment and the effect desired. It is apparent that in congestion venous circulation must be increased, while in anemia and undernourished conditions arterial circulation should be increased.

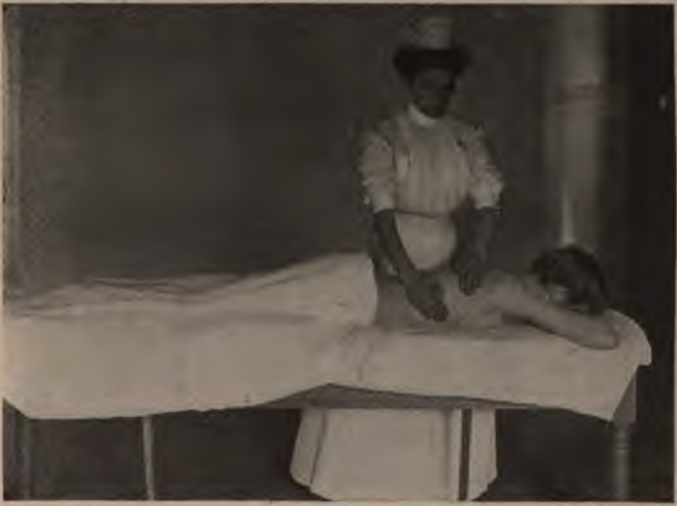

FIG. 190.—Palmar kneading of back (Max J. Walter, M. D.).

Length of Treatment.—"The dose of massage must be determined by the force and frequency of the manipulations, and the length of time during which they are employed, considered with regard to the effect upon the patient. A good manipulator will accomplish more in fifteen minutes than a poor one in an hour, just as an old mechanic working deliberately will do more than an inexperienced one working furiously."

In *touch and pressure* a distinction is to be made at once between the indifferent and ordinary contact of the hand with the body and the professional touch of the skilled and trained hand. The procedures of the latter are subdivided into the passive touch, ordinary pressure and nerve compression.

The *passive touch* consists simply of lightly touching the affected part with one or more fingers or the entire hand or with both hands. Although apparently a very simple act, yet the physiologic effects of the passive contact are far from superficial. First, the communication of animal heat raises the temperature. Second, there is a certain electric effect, a generation of muscular electricity. Third, there is a certain subtle influence on the general nervous system

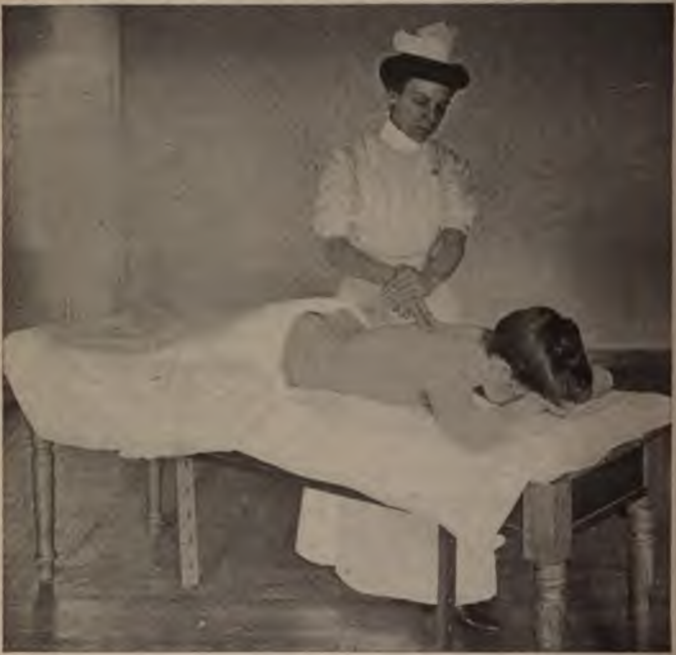

FIG. 191.—Digital stroking to sympathetic ganglia (Max J. Walter, M. D.).

due to a reflex acting through the cutaneous nerves upon those of the brain and cord.

To produce the hypnotic effect often much in demand or other therapeutic results, the passive touch must be supplemented by certain conditions. If the relief of insomnia be the results sought, the patient should be required to close his eyes; he should neither speak nor be spoken to, and all noises and disturbing influences should be rigidly suppressed.

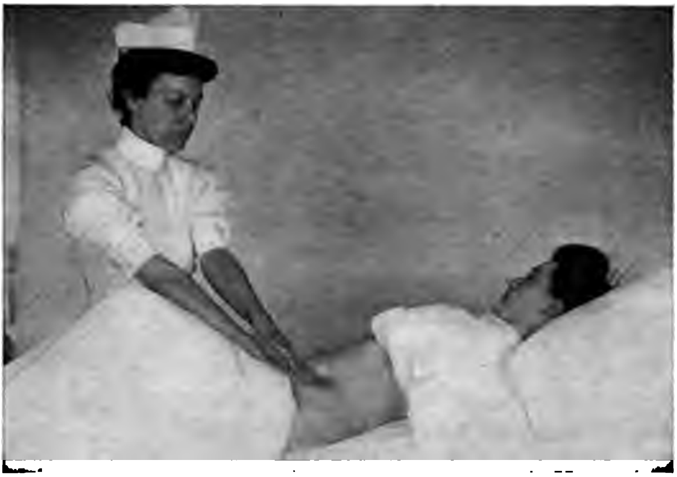

FIG. 192.—Abdominal massage. Digital friction over abdomen (Max J. Walter, M. D.).

In the *application of pressure*, whether light or ordinary or heavy or deep, one or more fingers or the whole of one or both hands are brought into use. The effect of this procedure is to diminish swelling and congestion and relieve pain in any part of the body. Firm pressure doubtless relieves pain, first by its power to empty blood-vessels and second by numbing the nerves.

The *third application of touch*, or nerve compression, is a procedure where firm pressure is applied at some especial point in the course of a nerve trunk.

The points in question are known as "motor points" and are found where the large nerve trunks are accessible, near the surface just beneath the skin. In spinal nerve compression the spine is straddled by the fingers and a firm pressure is applied opposite the spaces between the vertebræ.

The physiologic effects of nerve compression are those of stimulation. The nerve acted upon, its center and the entire nerve trunk, may be excited according to the repetition of the pressure to almost any desired degree. A firm, deep pressure by repetition may cause numbness or even so paralyze a nerve trunk as to occasion a sedative influence. An illustration of such effects is seen when nerve compression is applied to the abdominal sympathetic when in a hypersensitive state. We thus perceive that nerve compression may be either stimulative or sedative, according to the manner of its application.

Nerve compression possesses high therapeutic value in arousing the activity of all nerve centers. It is therefore useful in paralysis, in facial, crural, and intercostal neuralgia, sciatica, and the general stimulation of the spine. In connection with joint movements and massage it assists in emptying the veins, lymph spaces, and vessels found in the region of the joints.

Stroking.—One or both hands are employed in making the strokes. Pressure is exerted to some extent by the whole palm, but especially by the ball of the thumb and the inner surfaces of the fingers, as much of the surface as possible being used. The fingers are held straight and close together. The strokes must be made with great regularity. The hand must not be lifted at the end of the stroke, but should glide back to the starting point without pressure.

Light stroking has a sedative influence.

Heavy stroking stimulates the superficial structures, increasing the arterial, venous, and lymphatic circulation. All treatments begin and end with stroking, and friction is always followed by it.

Friction is performed with the fingers, called digital friction, or with the palm of one or both hands, called palmar friction, and consists of firm, semicircular movements. It is intended to promote absorption by the veins and lymphatics.

Kneading.—In this movement the operator tries to pick up the muscles or groups of muscles between the fingers of the two hands or between the thumb and finger and rolls and squeezes the muscles with a double movement. It is important to commence this treatment gradually and as gently as possible, especially in recent injuries, and to thoroughly manipulate the superficial structures before attempting to reach the deeper ones. It causes circulatory, nutritive, and alternative changes in the muscles and structures within reach. It is stimulative in its effect.

Percussion or tapotement, may be carried out with instruments, but few, if any, instruments are as well adapted to the purpose as the human hand. It is performed from the wrist, the hands giving firm, quick movements. Percussion is of different kinds.

1. Clapping, which is performed with the palms of the hands.
2. Hacking, performed with the side of the hand or the ulnar border.
3. Tapping, performed with the tips of the fingers.
4. Beating, performed with the clenched fist.

Tapotement is said to be the most stimulative of all movements.

Vibrations, which are rhythmic, tremulous movements under pressure, are used to enforce percussion movements, which should always be rapid and elastic.

The physiologic effects of vibration are stimulative, especially of deeper structures.

The effects of percussion are similar to those produced by kneading. As a rule, all the movements are practised at some time during a treatment.

The *order of procedure* and the area to be attempted have no fixed rules that are generally recognized, but some system is desirable. In children, when local massage is required, it is often found of advantage to supplement it with general massage.

Introductory treatment is desirable in cases where there is severe inflammation of the part. This consists in applying the treatment first to an adjacent region, usually above and elow th [illegible] lamed area. It is especially valuable in synovitis nd joint affections.

General Massage.—In giving general massage it is customary to begin with the extremities. It makes no especial difference whether the legs or the arms are treated first, but both should be treated before the body is begun. Next the back, then the chest and abdomen [illegible] t being operated on being the only part of the [illegible]

A systematic divi [illegible] s is as follows:

1. From the ends [illegible] the wrist, the returning stroke being light, [illegible] emoved.

2. From the wrist [illegible]

3. From the elbo [illegible] where both straight and circular friction ma [illegible] ell to begin on the inner surface of both arms [illegible] straight strokes.

4. From the ankle to [illegible] ng the side and back first and then the side and front for the movements. The same systematic division may be made above the knee, the inner and anterior surface of the thigh being treated first.

5. From the base of the skull to the spine of the scapula makes a convenient area for semicircular friction.

6. From the spine of the scapula to the base of the sacrum and crest of the ilium forms another convenient area.

7. The chest manipulation, from the sternum outward, is commonly practised, though these rules are often varied.

8. The abdomen is treated by beginning at the right groin and following the direction of the ascending, transverse, and descending colon.

Abdominal and Pelvic Massage.[1]—"The procedures in abdominal and pelvic massage, or ventral kneading, act through the abdominal walls upon the organs contained in the abdominal and pelvic cavities. Their influence upon the glands and epithelium of the alimentary canal is direct and powerful; the smooth muscle fibers, the nerves of the intestines, the circulatory system of the viscera at large, are benefited and encouraged to a degree formerly never dreamed of. Nor could anything be more simple, now that it is known, since to stimulate the nervous reflexes of the abdomen must naturally result in arousing the peristaltic, glandular, and vascular activities under control of the abdominal sympathetic."

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[1] Max J. Walter, M. D., Abdominal and Pelvic Massage in "The Trained Nurse."

Briefly considered, the effects of abdominal massage when properly given should be:

First—To relieve chronic constipation and general intestinal inactivity.

Second—To aid the stomach, intestinal and liver digestion, augmenting the power of assimilation and improving the appetite.

Third—To relieve certain renal disorders and to stimulate the kidneys to the more copious discharge of newly formed urine.

Fourth—To develop, and strengthen relaxed muscles and the smooth muscle fibers of the alimentary canal.

Fifth—For the removal of excessive or abnormal deposits of fat.

Sixth—To aid in the replacement of displaced viscera.

Seventh—To successfully relieve many forms of pelvic disease, especially by a system known as "gynecological massage," in diseases of the uterus, ovaries and their appendages; bladder rectum, and prostate glands.

The latter requires exact knowledge of the anatomy of the abdomen and a special technic known as the Thure Brandt system.

The averge abdominal massage as given with the general massage treatment should consist of movements in the following order:

1. Stroking.
2. Circular kneading over stomach and liver.
3. Deep alternate kneading over small intestines.
4. Deep kneading over colon, with sigmoid vibration.
5. Ulnar stroking over colon.
6. Vibration over stomach and liver.
7. Stroking.

Not more than ten to fifteen minutes should be allowed for an abdominal massage during a general massage of forty-five minutes. When the abdomen is treated alone it may safely be given for twenty-five or thirty minutes.

Massage of Ankylosed Knee and Elbow Joints.—In giving massage for ankylosed or stiff joints it is of utmost importance to remember that massage should not only be given to the stiff joint itself, but the muscular tissues above and below should receive equally careful attention. This also holds good of joint movements, which in a stiff knee, for instance, should not only be given to the knee itself, but also to the hip, ankle, and all the joints in the foot.

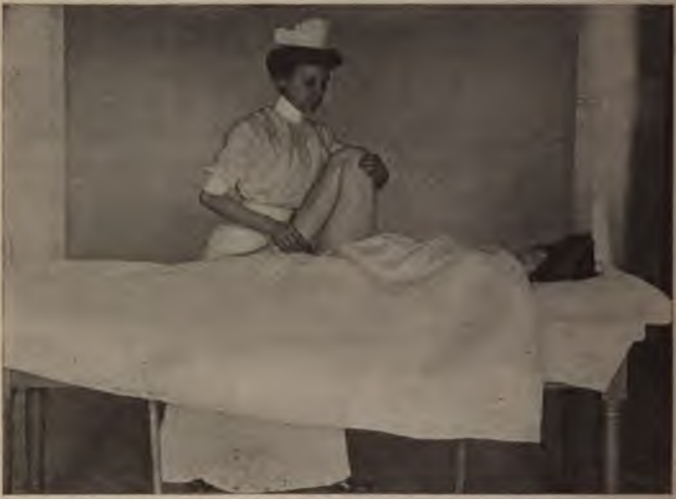

Fig. 193.—Knee-traction, first position in overstretching the sciatic nerve (Max J. Walter, M. D.).

We know that the blood-vessels are largest in the vicinity of the joints, and the purpose of the treatment in the neighborhood of the affected part is to increase the circulation to, through, and from the joint, thereby bringing exudations into the larger channels of the circulatory system.

Adhesions present should be firmly but gradually broken. If the ankylosis is an after-effect of a fracture or dislocation, extreme care should be exercised not to re-fracture or re-dislocate the affected part.

The movements to be used are learned in the general system of massage, but the nurse who is thoroughly familiar with the anatomical structures concerned will pay particular attention to the origin and insertion of muscles in the vicinity and also to the ligaments engaged in the action of the joint.

Joint movements should not be given until all acute swellings have subsided.

Lubricants.—To prevent irritation and abrasion of the skin some form of oily substance or powder is frequently used. Many operators prefer to use soap, but olive oil or cocoanut oil are substances commonly used. Cold cream is preferred by many on the ground of cleanliness and efficiency. Only enough to make the movements smoothly should be used. Large quantities of oil are obnoxious and uncleanly, and any remaining after the treatment of a part should be rubbed off before leaving the patient. Cod-liver oil acts as nourishment and is valuable in certain undernourished conditions.

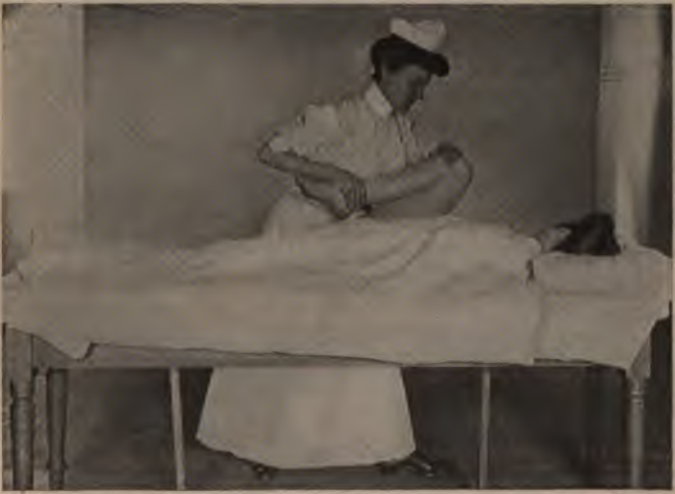

Fig. 194.—Knee-traction, second position in overstretching the sciatic nerve (Max J. Walter, M. D.).

Movements.—All movements are passive and are applied to the patient without his assistance. Passive joint movements are useful in stretching and stimulating the muscles and preventing adhesions around the joints.

Resistive movements can be of a twofold nature. Either the patient resists the operator's action or the operator resists the patient's action. The amount of resistance depends on the strength of the patient.

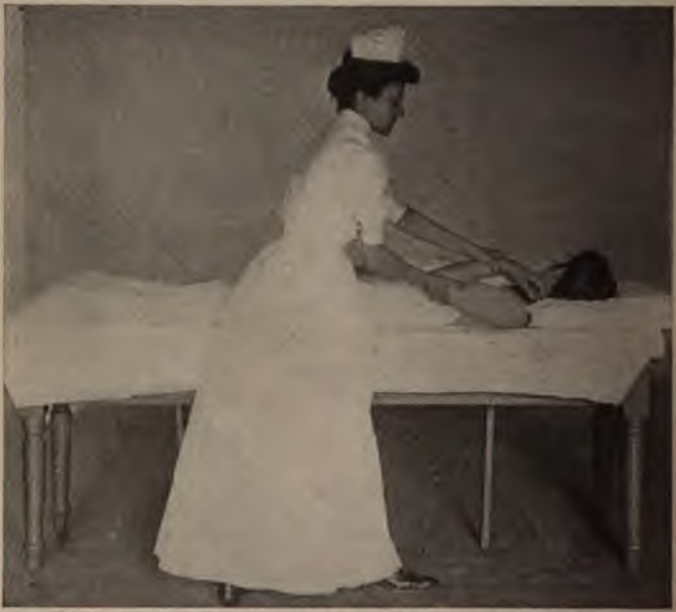

FIG. 195.—Joint movements of ankylosed elbow (Max J. Walter, M. D.).

Resistive movements strengthen the muscles and promote the nutrition of the tissues of the part.

The various movements are as follows:

Rotation, a circular movement of the joints in their limits.

Flexion and extension for preventing stiffness and deformity and relieving local congestion.

Abduction and adduction of extremities from and to the median line of the body.

Trunk bending and raising.
Pronation and supination.
Pulling.
Turning.
Depression and elevation.

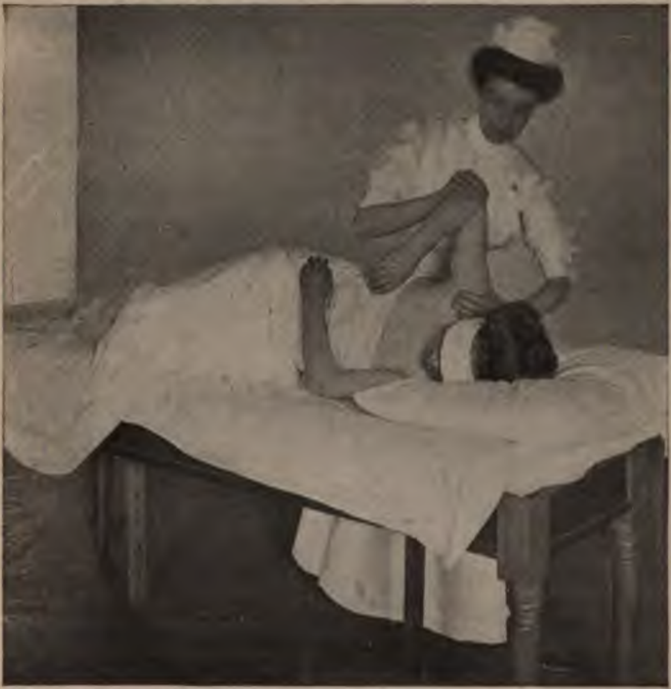

FIG. 196.—Rotation of humerus in glenoid cavity for ankylosis of shoulder (Max J. Walter, M. D.).

To properly manage these exercises a nurse must know the action of the joints thoroughly. It should be remembered that all exercises should stop short of fatigue.

NOTE.—Massage can only be taught properly by demonstration and practice under supervision. The theory contained in this chapter can properly be spread over a number of demonstrations and is inserted here, not to be taught separately from demonstrations, but to supplement the practical instruction received, and to make it easier for a nurse to grasp the fundamental principles of the art.

CHAPTER XXXV

DISEASES OF THE NERVOUS SYSTEM

The nervous system includes the brain, the spinal cord, the peripheral nerves, and the sympathetic system. The brain is the central commanding organ—the organ of mind, the seat of motor, sensory, and other centers.

In the general construction of the central nervous system with its connections, the nerves, there is a close resemblance to a telegraph system. The brain is the central station where messages are received; the nerves, corresponding to wires, ramifying in all directions, reaching every portion of the body, serve to bring each part into communication first with the spinal cord and, if necessary, with the central station. Nerves merely transmit impulses, sensory, motor, or special.

Nervous Tissue.—Of all the tissues of the body nervous tissue is the most complex, delicate, and highly organized, and possesses the least power of repair. Yet upon the perfect integrity and adjustment of this part of the human system the health and functional activity of all the organs of the body depend. In previous lessons the divisions and functions of the different parts of the nervous system have been studied. The brain is made up of (gray) cells and (white) fibers. The surface is called the cortex, and is made up of gray matter which contains the cell elements.

The *cortex*, or surface, of a normally developed brain is marked by ridges and grooves, which form what are known as convolutions. On the depth and number of these convolutions the mental power of an individual depends. This infolding of the surface largely increases the area of the cortex. The brain of a new-born infant is comparatively smooth. In primitive races the convolutions are small and imperfectly developed, and this condition, typical of low mental development, is also found in idiots and imbeciles. As convolutions deepen gray matter becomes more abundant and the intellectual development is greater.

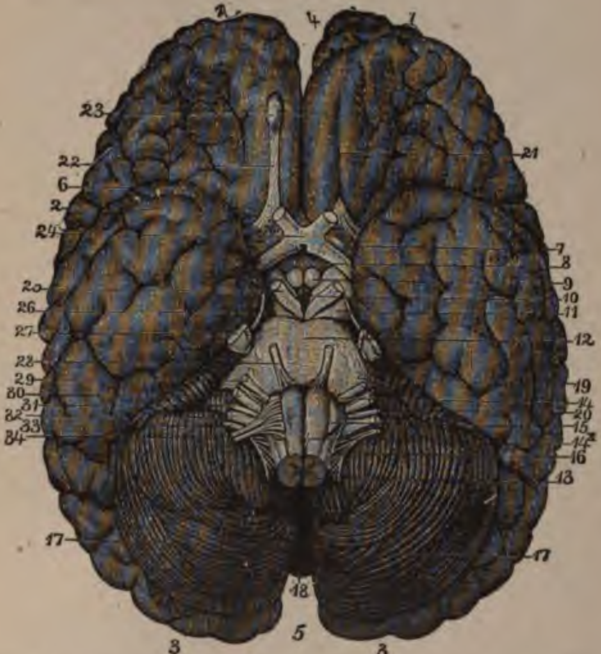

FIG. 197.—Base of brain: 1, 2, 3, cerebrum; 4 and 5, longitudinal fissure; 6, fissure of Sylvius; 7, anterior perforated spaces; 8, infundibulum; 9, corpora albicantia; 10, posterior perforated spaces; 11, crura cerebri; 12, pons Varolii; 13, junction of spinal cord and medulla oblongata; 14, anterior pyramid; 14x, decussation of anterior pyramid; 15, olivary body; 16, restiform body; 17, cerebellum; 19, crura cerebelli; 21, olfactory sulcus; 22, olfactory tract; 23, olfactory bulbs; 24, optic commissure; 25, motor oculi nerve; 26, patheticus nerve; 27, trigeminus nerve; 28, abducens nerve; 29, facial nerve; 30, auditory nerve; 31, glossopharyngeal nerve; 32, pneumogastric nerve; 33, spinal accessory nerve; 34, hypoglossal nerve (Leidy).

The cortex, or gray matter composing the surface of the brain, is made up of layers of nerve-cells. The ending of each nerve fiber is a cell. These numberless cells are of different form and size and, taken together, compose the real central commanding organ from which emanate motor impulses and to which come all sensations as news from the outer world. When the cortical cells are injured or destroyed power

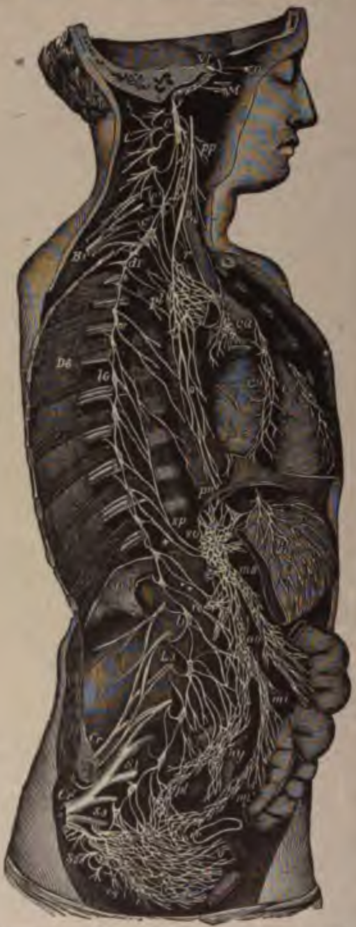

FIG. 198.—Diagrammatic view of the sympathetic cord of the right side, showing its connections with the principal cerebrospinal nerves and the main preaortic plexuses. (Reproduced from Quain's anatomy.)

to move or to feel pain ceases, according to the special function of the cells injured or destroyed.

The *cerebrum*, or greater brain, occupies the upper and frontal portion of the cranium. A deep fissure divides it into two hemispheres—the right and the left—each hemisphere being again marked off into lobes.

The *cerebellum*, or lesser brain, composed of white matter with a surface covering of gray, is the center for coördinating muscular movements.

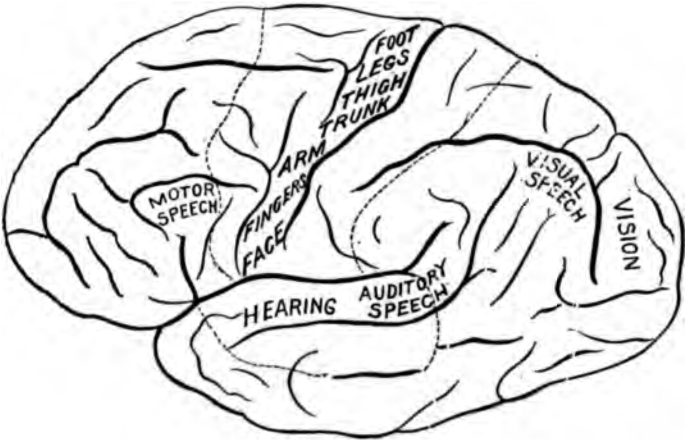

Fig. 199.—Functional areas of the cerebral cortex, left hemisphere (A. A. Stevens).

The *medulla oblongata* is the upper enlarged portion of the spinal cord, and acts as a medium between the brain and the cord. The functions of breathing and swallowing and the secretion of saliva are controlled by it.

The *spinal cord*, being an important part of the motor and sensory pathways, assists in conveying impulses to and from the brain and also contains motor, sensory, and other cells. The ganglia send fibers to glands, thus exciting secretion, and to blood-vessels, changing their caliber. When actions are produced unconsciously they are termed reflex acts.

Decussation of Nerves.—The nerves from one-half of the body go to the opposite half of the brain. This crossing is called a decussation and occurs at different levels for the sensory and for the motor fibers.

The *brain*[1] is the organ of the mind.

Brain actions are localized, or, in other words, there is a division of labor among the different parts of the brain. One part and one only commands the action of the foot. Another part commands the action of a hand. There are areas of sight, hearing, smell, etc., also of articulation and language.

Classification of Nervous Diseases.—The most useful distinction is probably the one which separates functional diseases from those known as organic.

Functional diseases are those having no known organic change or lesion as a cause, but in which the working of the organ is nevertheless disturbed or interfered with.

Organic diseases are those in which there is a change in the structure or tissues of the organ. It is quite possible, however, that in many so-called functional diseases there may be a temporary organic change.

A *neurosis* is defined as a disorder of the nervous system not dependent on any discoverable lesion.

Opinions vary much regarding the proper classification of nervous diseases. The following list includes the more common affections of the nervous system which the nurse is likely to encounter:

Hysteria.
Neurasthenia.
Hypochondria.
Psychasthenia.
Neuralgia.
Chorea.
Epilepsy.
Migraine.
Writer's cramp.
Paralysis agitans.
Meningitis.
Neuritis.
Myelitis.
Apoplexy.
Locomotor ataxia.
Facial paralyses.

General Symptomatology.—Fever symptoms are prominent, chiefly in meningitis and other diseases inflammatory in character. In most other nervous diseases the symptoms are usually either motor, sensory, mental, or trophic, those involving nerve-centers which influence nutrition.

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[1] Burr.

Motor symptoms, or symptoms in which the muscular power is interfered with, may be convulsions, uncontrolled movements, as in chorea, paralysis agitans, and locomotor ataxia, paralysis, as in apoplexy or injuries to the cord or brain; aphasias, or loss of the power of speech, which may or may not be motor in character. Of these motor symptoms the convulsions vary mostly in degree. The character of the uncontrolled motions differs. The paralyses differ according to the localization of the lesion in the brain cord or nerve.

Paralysis may be caused by diseases of the brain, spinal cord, or nerves. If the lesion exists in the cord it is more likely to affect both sides of the body—paraplegia (dependent, of course, on the extent of cord involved). In monoplegia, one arm or one leg only may be affected.

Sensory Symptoms.—It will be readily seen that interference with a sensory nerve will result in disturbance of sensation, just as interference with a motor nerve will produce disturbance of motion.

Anesthesia is a paralysis of sensation.

Hyperesthesia is an increase of sensation. Sensory disturbances are less frequently observed than motor symptoms.

Mental symptoms are most prominent in mental diseases, but varying degrees of depressions, elations, dulness, irritabilties, and morbid ideas occur in the course of many diseases.

Functional Nervous Diseases.—It is of no part of a nurse's business to diagnose disease. This fact is well known, yet every day it is easy to find such rules being disregarded thoughtlessly. Guesses in many cases will be made, but exceeding great care should be used to avoid expressing one's opinions. It is not unusual to find a nurse glibly passing judgment on complex nervous cases on which skilled physicians have hesitated to venture a positive opinion.

Nervousness.—It will be readily recognized that nervousness (lack of nervous balance) is present in a great many diseases. It is a prominent characteristic in many individuals who are not sick. In many cases the nervous system responds excessively to slight irritants. In other cases it responds only slightly to gross excitements. When there is a ready response to slight stimuli the condition popularly known as nervousness is the result. The unusual irritability of many who are sick is a common example of such conditions. Nervousness is a common term by custom reserved for the slighter morbid changes, such as irritability, excitability, and emotional changes.

When a susceptible nervous system is more profoundly affected various other terms are used to characterize the condition, and it should be remembered that in functional nervous diseases there are no very sharp lines of limitation. Five types of functional diseases are recognized which may be worthy of special mention—hysteria, neurasthenia, traumatic neurosis, hypochondria, and psychasthenia.

Hysteria is defined as a state in which there is easy and great emotional disturbance, in which ideas control the body and produce morbid changes in its functions. Heredity and education are important factors in laying the foundations for the disease. Its types and phases are many; they may be convulsive or non-convulsive.

Convulsive hysteria may succeed great or even slight emotional disturbances. The convulsive movements are disorderly. The patient falls and the abdomen may be distended with flatus. The paroxysm may subside quickly and consciousness return, or the patient may remain in a semistupor for some time. The limbs may be moved, but refuse to support the patient.

Contractions of the arm, fingers, or the muscles of the hip, shoulder, or neck are common in hysterical conditions. Contraction of the diaphragm, with relaxation of certain muscles, a peculiar bend of the spinal column, and the presence of flatus in the intestines may cause conditions resembling an abdominal tumor, pregnancy, or the distention of peritonitis. Indeed, many are the organic disease conditions which hysteria may simulate. Hysterical paralysis is frequently encountered and is difficult to distinguish from true paralysis. Hemiplegia, paralysis of one side of the body, is a common manifestation.

Disorders of sensation are common. Anesthesia occurs more frequently than hyperesthesia. Pain may be complained of in any part of the body. The special sense may be disordered. Hysterical deafness and hysterical blindness or loss of sense of taste and smell may occur.

Disorders of the respiratory system, hiccough, and hysterical cough are familiar manifestations. A condition resembling hemoptysis has been seen, where the expectorated matter came from the mouth or throat.

Miscellaneous Symptoms.—Among the most familiar symptoms are disorders of digestion, with depraved appetite, anorexia, vomiting, and difficulty in swallowing. Diarrhea, constipation, and flatulency are frequent accompaniments of the condition.

Among the rarer affections may be mentioned joint affections of the knee or hip. The joint may be fixed, swollen, and sensitive. These cases are often healed instantly by quacks. It is this class of cases which serves to maintain the reputation of various shrines and relics. Hysterical fever occasionally exists, the temperature rising daily to 102°F. or over.

Suggestion has helped to produce many of the hysterical symptoms. When the temperature and pulse are normal suspicion may well be aroused and close observation of such patients is needed. Once the attention has become concentrated on any organ a variety of symptoms are liable to be complained of. It is not uncommon to find medical students in the earlier period of training having the symptoms of the different diseases which they happened to be studying, and in individuals who by heredity and education are predisposed to hysteria suggestion often proves quite sufficient to produce disease.

It is a mistake, however, to assume that the hysterical patient is wilfully deceptive or has planned an attack. It is difficult to fully analyze all the actions of any mind, yet it may be taken for granted that such symptoms are not planned, even though they may seem to be. Harsh measures in such cases are always to be avoided. Wholesome moral influence is all-important and in many homes and places difficult to secure. Such patients need the influence of a strong wholesome personality who will command their confidence, who is able to create confidence and assurance in the mind of the patient, and help him to get the mastery of himself. Such patients should never be told that their troubles are imaginary. It is rarely true and the statement always antagonizes. In many cases they have been the victims of unwise suggestions from friends, or doctors, which they alone have been unable to combat.

Management.—It is never wise for a nurse to announce to any one that her [illegible]ring from hysteria. Few things which she n[illegible] as prompt offense as that, even if it be true. [illegible]ever to try to combat the hysterical idea di[illegible] her topic of conversation or of thought may [illegible]hich is only another form of suggestion. A [illegible] often acts as a substitute. Direct opposition is [illegible]e. It is wise also to ignore as far as possible an[illegible]ns of such patients. Sympathy may be felt, b[illegible]o say very little about it. The rest cure is often p[illegible] Such patients should be urged to abstain from using such drugs as morphin, chloral, or cocain independently, as they fall an easy prey to habit.

Faith-cures are frequently reported regarding such cases. It is not difficult to recognize that there is a rational basis for the multitude of "cures" which would otherwise be most puzzling when the influence of suggestion is understood plus the element of faith. The prayer cures, shrines, relics, and a great variety of so-called "cures" or remedies, widely differing, all have this basis. The mind sways the body. In many cases the original symptoms have come in through one set of suggestive influence, and a different train of suggestion is all that is necessary to overcome them. Quite often ordinary substitutes or diversion will be sufficient for a cure. It is not uncommon to find a woman who has persistent emaciation, headache, digestive disturbance, etc., who is helped to cheerfulness and health by a vacation trip. It should also be remembered that there is a natural tendency for diseases to get well without any aids.

At the bottom of all the varied classes of mind cures there is faith, and there must be a passive condition of mind which makes it possible for the "mental healer" to influence the mind of the patient by suggestion. The patient must be passive and be willing to receive impressions. Success depends to a large degree on "knowing the patient's habits of thought, his beliefs, his prejudices, and above all his mental environment." It is always important to ascertain what the patient's mental attitude is toward his own condition.

CHAPTER XXXVI

DISEASES OF THE NERVOUS SYSTEM (Continued)

THE successful treatment of nervous diseases depends largely upon three factors:

1. Discipline.
2. Utilization of physical measures that are known to influence constructive metabolism, such as water, electricity, massage, heat, exercise, rest, occupation, etc.
3. The point of view, or what may be called learning to see straight. In other words, teach the unfortunate individual who has become ill to see himself and his disorder in the right light and in the right relation to his environment.

Neurasthenia means lack of strength in the nervous system. It is a depression due to exhaustion of nerve force, gives rise to various forms of mental and bodily inefficiency, is usually caused by prolonged or excessive expenditure of energy, and is probably the most common of all nervous diseases. In many such cases some organic disease is present also, the neurasthenia developing as a result of the constant irritation of the nervous system by abnormal conditions in some part of the body. It may, however, and frequently does, develop as an independent affection.

Causes.—These may be either hereditary or acquired. Osler says regarding this point: "We do not all start in life with the same amount of nerve capital. Parents who have led irrational lives, indulging in excesses of various kinds, or who have been the subjects of nervous complaints or of mental trouble may transmit to their children an organization which is defective in what for want of a better term we must call 'nerve force.' Such individuals start handicapped with a neuropathic predisposition, and furnish a considerable proportion of our neurasthenic patients. . . . So long as these individuals are content to transact a moderate business with their life capital all may go well, but there is no reserve, and in the exigencies of modern life these small capitalists go under and come to us as bankrupts."

Symptoms.—The symptoms are extremely varied and a great many different types of neurasthenia are seen. The terms cerebral, spinal, cardiac, and gastric neurasthenia are sometimes used in referring to the affection in which the predominant symptoms seem to be localized in those regions. One of the most common of all symptoms in this disorder is the feeling of fullness or pressure in the head. In these cases the special senses are very likely to be disturbed and interference with vision—an aching or weariness of the eye-balls after reading a few minutes is a frequent symptom. Probably the most marked feature is the excessive feeling of fatigue after comparatively slight exertion. Other common symptoms are sleeplessness, headache, loss of appetite, inability to concentrate the mind, worry, and mental depression. Disturbances of the digestive system are commonly present. Constipation is a frequent accompaniment of the condition, and many neurasthenic patients suffer periodically from flatus in the stomach and intestines. Palpitation or "beating" in the head are often complained of.

Genito-urinary disturbances and also disturbances in circulation are frequently associated. Of the former, frequent micturition and disorders of the menstrual flow are common in female patients. Palpitation and occasionally pain in the region of the heart and stomach are not rare.

Traumatic neurosis is a condition not infrequently met with as a result of injuries of various kinds. It is defined as "a morbid condition following shock, which presents the symptoms of neurasthenia or hysteria or of both. The condition is often spoken of as 'railway brain' and 'railway spine.'

"The condition follows an accident, often in a railway-train, in which injury has been sustained, or succeeds a shock or concussion from which the patient may apparently not have suffered in his body." (Osler.)

Hypochondria is a morbid anxiety about the health and a constant fear of the existence of serious disease in some of the organs. It is said to be more frequently met with in men than in women.

Psychasthenia (also termed phrenasthenia) is a condition resembling in many ways neurasthenia and hypochondria. A prominent characteristic of this condition is that termed "imperative ideas" and "mental besetments."[1] "Psychasthenic patients suffer almost constantly with the sense of incompleteness or of insufficiency from disturbances of the feelings of reality and from other symptoms referable to the lowering of the so-called psychological tension. . . . A persistent sense of boredom is not an infrequent complaint. . . . Other patients suffer from an indefinable anxiety or disquiet, a growing indolence, an increasing lack of resolution, a corresponding feebleness of effort, the quick development of fatigue on exertion, a dislike for new surroundings or occupation, a preternatural social timidity, an abnormal inertia, or even outspoken cries of exhaustion;" all these are mentioned as common accompaniments of this affection.

"The main prop of treatment will rest on the exercise of the will power by the patient who should argue with himself, and endeavor to convince himself that his various vagaries of thought have no foundation in fact." (Joseph Collins.)

Neuralgia is a term used to denote pain in a nerve or radiating along the course of a nerve. Usually neuralgic pains are of a severe throbbing character and intermittent. There are many varieties of this affection. The fifth cranial nerve, which supplies the face, is commonly affected. Intercostal neuralgia and sciatica are other familiar illustrations.

Management of Functional Nervous Disorders.—Rest, isolation, the improvement of nutrition by various means, hydrotherapy, and psychotherapy are the principal means used in dealing with functional nervous disorders in general. For Dubois' routine treatment see Appendix.

It has been found that the rest cure, from which brilliant results are so often obtained, is not applicable to all cases as routine measure.

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[1] Lewellys F. Barker "Medical Gynecology" (Kelly).

The *dietetic treatment* is also of great importance. In many cases prejudices against various articles of food are very difficult to overcome. Regarding the question of diet, a well-known physician who has had much experience in dealing with such cases in hospital practice and in a large sanitarium
says:[1] “We do n We diet individuals; and
two individuals w ase may require different
diets. A few gene et worthy of consideration
are as follows: Fi are very similar, however
different the foods up may be. For instance,
if you tear down t different architecture and
pile the bricks in o in another heap, and the
iron in another he ther difficult to tell what
kind of house these ed; and yet that is exactly
what our digestive organs do. ey tear down the various
foods to the simple foodstuffs, and there really is not so very much difference in these products of digestion which are absorbed into the blood-stream.”

“Second, it is necessary to be careful to furnish the correct amount of heat to the body. This does require care, and yet we know that the amount of heat in the proteins is about equal to the amount of heat in the carbohydrates, and this is about one-half the amount in an equal weight of fat.

“Third, a great deal depends upon the way food is prepared. A piece of beefsteak has not a definite value which is invariable; one has always to think of the condition before cooking and the way it is cooked.

“Fourth, quite as much depends upon the mental condition of the person eating as upon the preparation of the food. Pawlow’s work has shown that the secretion of gastric juice depends greatly upon the psychic stimulus, and digestion depends greatly on the rapidity with which this secretion occurs.

“Lastly, many patients are terribly crazy about the matter of diet, and it becomes a duty to disabuse them of many of these fads and theories by showing them that of the foods on the ordinary menu there is scarcely one which cannot be so prepared that it will not be beneficial to almost any patient. It is interesting to observe that they will with pleasure take a food when it is prescribed as a medicine which would distress them if ordered as a food."

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[1] Dr. Charles P. Emerson.

Isolation.—In practically all of the more severe types of nervous disorders, more especially in those of a functional type, isolation from friends is an important part of the treatment. It is sometimes very difficult to carry out, and is seldom successful when attempted at the patient's own home. During the period of isolation a strict régime is carried out, and the influence of the nurse often becomes a very potent factor in recovery.

Fresh air in abundance is also of great value to such patients. Occupation of various kinds, such as basketry, crocheting, knitting, etc., are used with much benefit after the period of rest.

Points to Remember.—First impressions are very likely to be lasting or very hard to change. The first meeting with a nervous patient may determine the nurse's success or failure to a large degree.

It is a mistake to report to the physician on the symptoms or condition of a hysterical patient in her presence.

A good listener in course of time will get many points of value, and confidences which may be quietly and unobtrusively used for the benefit of the patient.

"A cold pack at night, while useful in many cases of insomnia, may be actually harmful in a very irritable or hyperesthetic woman. In its place a warm pack or a prolonged warm bath may yield better results."

In spite of the fact that there may be no rise of temperature, that the microscope shows the presence of no disease-producing germs, or that common symptoms of disease are absent, neurasthenic patients suffer. Few greater mistakes are made in dealing with nervous patients than to settle down into the belief that their sufferings are imaginary.

A positive, quiet, firm manner that is never harsh, never obtrusive, is necessary for the best results with nervous patients. The nurse should aim to supply the mental control which the patient lacks. If it is inadvisable to tell the truth say nothing.

Training the patient to eat unaccustomed things or articles of food which he objects to or is sure they will disagree is in many cases an important duty. It becomes a part of the reëducation of the patient.

The mental atmosphere which surrounds a nervous patient is of special importance. Unwholesome mental influences are as much to be s unwholesome food.

Nurse the patien e disease. It is rare that two patients can b tly the same way, though the principles of m be the same. Study each patient and his sur

Chorea is char ular voluntary muscular twitching. In chi cute, having an approach, a climax, and a gra ally followed by recovery. The chief symptom half-purposeless and uncontrollable movements of some muscles. These movements may increase so as to produce extreme exhaustion and, in rare cases, death. The promotion of sleep and rest is important, and often difficult. The general rule is to feed well with easily digested, nourishing food. In mild cases complete isolation, rest in bed, and ordinary hygienic measures are sufficient to effect a cure.

Epilepsy has been defined as an affection of the nervous system characterized by attacks of unconsciousness with or without convulsions. When the loss of consciousness is brief and there are no convulsions and no fall the affection is known as petit mal. When the convulsions are general and the loss of consciousness is prolonged and complete it is known as grand mal. In grand mal the seizure may be divided into three stages, the stages of tonic and clonic spasm and coma. The postepileptic symptoms should be carefully noted and accurately described by the nurse. Ordinarily the attack will be over before a physician sees the patient. The mental condition should be noted and whether or not there is disturbance of speech. The urine should also be examined. "Examination of the tissue of the body after death fails to reveal any structural abnormality, therefore we call epilepsy a functional disease." (Collins.) The causes of an attack should be sought for and avoided. Careful attention to diet and habits can do much to lessen the attacks. Eye defects, nasal obstructions, etc., anything that tends to irritate the nervous system, should be corrected.

Migraine is defined as "a nervous affection marked by a periodic headache, often one-sided, and accompanied by nausea, vomiting, and various sensory disturbances. It is apt to be paroxysmal in character, comes with little warning, lasts from a half to two days or more, and is gone till the next paroxysm. It is met with in all sorts of patients and in those who otherwise seem to be in good health. General tonic measures and the prevention as far as possible of stomach and liver disorders are the common means used to prevent its recurrence.

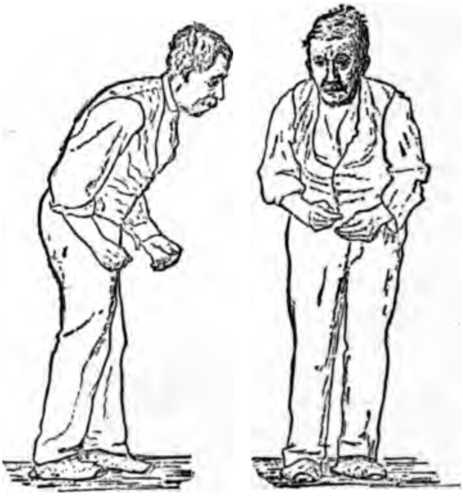

Fig. 200.—Paralysis agitans (after St. Leger).

Writer's cramp is an occupation neurosis due to excessive writing. It is marked by spasmodic contraction of the muscles of the fingers, hand, and forearm, with neuralgic pain in those parts.

Paralysis agitans is marked by loss of muscular power, rigidity, and tremor, and generally assumes a chronic form. It usually occurs in individuals who are nearing old age. Exposure to cold and wet and mental worry may act as exciting causes where there is a family predisposition to nervous affections. The tendency is for the disease to progress slowly till death occurs.

Meningitis, or inflammation of the meninges, may occur from a variety o [illegible] injury, extension of disease from some adja [illegible] mastoid or erysipelas, are common causes. [illegible] follows syphilis, and may occur as a com [illegible] Tuberculous meningitis is a frequent disea [illegible] n epidemic, infectious form is also recognize [illegible] communicable diseases.)

Management.– [illegible] to the head are commonly used. Warm or [illegible] t, etc., are employed. The tendency toward [illegible] be constantly fought, and great care is needed to guard against unnecessary exertion of all kinds.

Tuberculous meningitis develops slowly and tends to progress slowly. Convulsions are likely to occur late in the disease, and death is the usual result.

Locomotor ataxia (tabes dorsalis), or posterior spinal sclerosis, is a chronic disease producing incoördination of the muscles concerned in locomotion, and involving the special senses. The majority of such cases are said to begin between the ages of thirty and forty. Syphilis is believed to be the most frequent cause, though injury, exposure to cold and wet, overwork, and other causes, such as infectious toxic processes, are recognized. The disease runs through three stages, the incipient, the ataxic, and the paralytic, each of which has its special symptoms peculiar to that stage. Massage, gymnastics, baths, electricity, with various drugs are all used, and are often helpful in arresting the disease and relieving symptoms.

Apoplexy (cerebral hemorrhage or "stroke of paralysis") is defined as sudden paralysis and coma from effusion and extravasation of blood or serum into the brain or spinal cord. It is due to a degeneration of the arteries of the brain, and usually occurs in persons beyond fifty-five years of age. The apoplectic seizure comes on, as a rule, without warning. There is sudden unconsciousness, a fall, and contraction of the muscles. A comatose sleep follows, with deep snoring breathing, from which after a varying length of time the patient may wake. There is usually partial paralysis. There is reason to expect a recurrence of the "stroke" should the patient recover, since the arteries are weakened. Occasionally the convulsive movements are absent.

The nursing of such patients is important. The head should be elevated and turned to one side. Bed-sores are to be guarded against. Fluid food must be carefully administered. Rectal feeding is often needed. The bladder must be emptied at frequent intervals. Ice to the head and perfect quiet are necessary in the early stages. Usually some purgative is given. Iodid of potassium to aid in the absorption of the clot which is making pressure in some part is frequently ordered.

The first treatment is directed to preventing further hemorrhage. *Stimulants should never be given.* Later the remedies are directed to improving the paralyzed parts and lessening the danger of future attacks. All such patients should be cautioned to lead a quiet life, avoid alcohol, or excesses, or excitement of any kind.

CHAPTER XXXVI

NURSING IN MENTAL DISEASES

Insanity has been defined as lack of adjustment. It is "a disorder of the mental faculties more or less permanent in character, but without loss of consciousness and will." (Dorland.)

"We are all creatures of varying moods, being gay to-day and sad tomorrow. While in a state of normal mental health, a certain balance is maintained between our activities and feelings. The scenes of life are rapidly shifting and in order that we may react normally to our environment, we must be constantly adjusting ourselves to the changing conditions. In this manner we maintain a balance among the activities and an equilibrium is restored when unusual conditions tend to disturb the balance.

“The fference between sanity and insanity is, the difference of balance among the activities, but there is no broad line of demarcation between sanity and insanity. There is but rarely a sudden change from sanity to insanity. The condition which we term insanity generally develops very insidiously. Sanity means a proper adjustment of the activities and feelings to the varying conditions of life. Insanity means a failure of
adjustment. Tl ie failure of adjustment we
do not call insan rst symptoms manifested of
failure to adjust d a warning and it is then
that re-adjustme e.[1]

In the nursing its the nurse will need her
general knowledg nanagement of medical and
surgical ailments, t a patient is mentally dis-
ordered does not r ne to other diseases to which
human flesh is heir. She eternal vigilance, a keenly active mind, a strong sense of her personal responsibility, and an unfailing optimism; a firm belief that many mental patients may be restored to normal, and that even for the so-called hopeless case much may be done to render life tolerable, to increase general comfort, and add to the joy of living.

[2]“She must safeguard them from injuring themselves or others, must possess many of the qualities that make a good teacher, since a part of her duty is to help correct faults in early training and development, and to encourage and train to correct and useful habits and proper behavior. She has also to employ and entertain her patients, under the direction of the medical officers; and to her is entrusted that almost constant association and companionship which, if sympathetic and judicious, is one of the most potent means of restoring her charges to mental health.” (Barrus.)

Emergency care, for which in general nursing very definite measures have been outlined and agreed on, is none the less needed in mental nursing, and may differ with each individual case. In a hospital certain rules and routine measures adapted to the varied conditions met with may be outlined, but in caring for the mental patient in his own home, emergency measures depend largely on the keen judgment of the nurse. In many mental disorders, acts of violence, destruction, and of wild impulse are to be expected at some time, and call for prompt emergency measures. Equally important sometimes is it for the nurse to refrain from doing anything, thus avoiding an issue and a possible personal conflict.

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[1] G. M. Robinson, M. D.

[2] “Nursing the Insane.”

Difficult situations can very often be avoided by proper study beforehand of what might possibly be used for self-destruction, or to injure others.

Precautionary measures in all cases would include attention to medicines, disinfectants, etc., and the keeping of them where the patient cannot secure access to them; the guarding of knives, scissors, hat-pins, forks, keys, etc. Any article of glass —looking-glass, window, tumbler, etc., in the hands of one who is excited and mentally deranged, may furnish an instrument of self-destruction when broken. A sheet, a bath-robe, a valise strap have all been utilized by patients bent on death by hanging. Gas-jets and lighting fixtures may prove sources of danger. Scissors which are common every-day necessary articles of use in a ward or home are apt to prove dangerous weapons in the hands of an irresponsible patient. The method of meeting emergencies of various kinds, which under the conditions existing are possible, should also be thought out in advance.

Paralytics require constant watching, and especially during feeding. Such patients have been known to choke in trying to swallow, unmasticated, a piece of beef, or even a large crust of bread crammed into the mouth of such a patient, has been known to cause death. The same is true of suicidal cases. All such patients require food cut up very small.

Exhausted patients need to be generously nourished and their strength saved in every possible way. Sleep is of primary importance.

Epileptics should never be allowed to assist in the daily routine in such a way that they need to get into any position in which, if they fell during a seizure, they would injure themselves. There is also danger in going up and down stairs, and in allowing them to be near open fires. These patients also are liable to injure themselves if allowed to fill their mouths over full. In the later stages spoon-feeding is often necessary.

Insane epileptics are prone to make false charges against those who care for them, and the same is true of any case in which there is a strong element of hysteria. Complaints of personal violence are common in such cases, and the possibility of patients injuring pulling out their hair or inflicting wounds o lies, and attributing it to cruelty on the part ould never be lost sight of.

The *method of ap* se of a new patient should be exceedingly gu pressions are quite as important as in the individuals. Injudicious talking on the part o easily create suspicion and render her work more lk little, be ever vigilant, but let your vigilance be alway sked, are points of special importance.

Mental hygiene has been defined as "the prevention of mental disease and the maintaining of mental health. It must consist of an education which takes into consideration, in a given case, peculiarities of constitution and temperament, the choice of appropriate occupation and pursuits, the avoidance of errors in religious teachings, the right attitude toward, and the regulation of, the sexual life, training in right thinking, and encouragement to right responses when the various influences call for action." (Barrus.) A sound body will have a great influence in maintaining a sound mind. The mental breakdown in a great many cases has been preceded by physical ailments of various kinds. In a large proportion of the cases of suicide which occur a prolonged period of ill health has preceded the rash act committed in a moment of intense discouragement or mental depression, due to the general physical condition.

Why should Any One go Insane? is the title of a leaflet issued by the State Charities Aid Association of New York, with a view to the prevention of mental diseases. It has the endorsement of a number of prominent specialists in this field and is worthy of a careful perusal by nurses. It emphasizes the necessity of preventive measures, stating that of the 32,000 persons in that state who are being cared for in the hospitals for the insane, most of them might have remained "sane and lived useful happy lives if they had known certain facts and acted accordingly."

Causes.—The causes of insanity have been classified as follows:

"Direct physical causes, 36 per cent.

"Indirect physical and emotional causes, 8 per cent.

"Vicious habits, 25 per cent.

"Constitutional and evolutional causes, 28 per cent."[1]

Among the *direct physical causes* which may lead to prolonged mental unsoundness, blows on the head or other injury; debilitating disease, cancer, syphilis, consumption, Bright's disease, child-bearing, or prolonged nursing, etc., are mentioned. Through interference with the blood-supply of the brain, through accumulation of deleterious substances in the system, and in various other ways any of these may act as causes.

Indirect physical and emotional causes include fright, grief, worry, mental shock, domestic unhappiness, etc. These causes operate indirectly through the physical system, producing loss of sleep, loss of appetite, imperfect digestion and assimilation, etc., which interfere with the normal process of repair.

Vicious habits include drug addictions, such as morphin, chloral, etc.; excessive indulgence in alcohol, self-abuse—any habit which tends to weaken and undermine the health.

Constitutional and evolutional causes include hereditary tendencies and the critical periods in life—puberty, adolescence, the climacteric period, and the period of decay, known as the senile period, when bodily and mental feebleness are prone to manifest themselves.

Heredity.—Most persons think that insanity may be directly inherited. This belief is undoubtedly wrong. One may inherit a greater or less tendency toward insanity. Mental instability may be inherited just as weak constitutions may be inherited. Those who have reason to believe that there was mental disease in their ancestry should not be unduly alarmed. The fact that some of their ancestors suffered from mental trouble does not make it certain that they will suffer likewise. These tendencies toward insanity may lie dormant during the whole life of the individuals, but such persons should take proper precautions to prevent the development of this tendency. As a weak constitution may be built up by healthful habits, so may mental instability be made stable by good mental and physical habits. The individual whose family has had mental trouble may often escape the disease by proper surroundings, healthful and temperate activities, and proper mental and physical habits. The most important fact in heredity is that the vast majority of ancestors of every individual were normal. Heredity tends, therefore, rather more strongly toward health than toward disease.

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[1] Burr.

The fact that heredity plays a part in the causation of insanity should create a public conscience regarding marriage. Marriages should not be contracted by two persons who have insanity or feeble-mindedness in their immediate families without first seeking the advice of a competent physician.

Immoral Living.[1]—"One kind of insanity is known popularly as 'softening of the brain.' It is known scientifically as general paralysis, or paresis. It is incurable by any means now known to the medical profession. Those afflicted with it suffer gradual mental and physical decay. The very substance of the brain becomes changed. They usually live but a few years. It is now agreed by the medical profession that this disease is caused by an earlier disease known as syphilis. Syphilis is a germ disease. It is usually the result of immoral habits, though one may get it innocently. Every man and boy should know that by yielding to the temptation to go with immoral women he is exposing himself to the probability of getting this disease, which may result, years after, in incurable insanity. Over the door of every immoral resort might truthfully be written, 'Incurable insanity may be contracted here.' If self-respect, the desire for the good opinion of others, the influence of religious training, and the attractions of home life are not sufficient to prevent this kind of wrong-doing, the danger of contracting a disease which may result in incurable insanity should be sufficient.

"The number of patients having paresis or 'softening of the brain' admitted to State hospitals during the year ending

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[1] From leaflet, "Why should Anyone go Insane?"

September, 30, 1910, was 600 men, or 17 per cent. of all men admitted, and 263 women, or 8 per cent. of all women admitted.

"*Alcohol and Other Poisons.*—Another group of mental diseases are due directly to the habitual use of alcohol. Alcoholic insanity may be brought on by the regular use of alcohol, even in 'moderate' quantities not producing intoxication. The close relation between alcohol and insanity has only recently been fully realized. Statistics as to the number of cases in which alcohol is the direct cause necessarily vary in different localities. Fully 30 per cent. of the men and 10 per cent. of the women admitted to the State hospitals are suffering from conditions due directly or indirectly to alcohol. So marked is the effect of alcohol upon the brain and the nerve tissue that it helps to bring about a number of mental breakdowns in addition to the alcoholic insanities.

"Alcohol is a poison. A long series of careful tests performed by eminent authorities showed that even small quantities of alcohol may lower the mental capacity, and that it takes much longer than is usually supposed for this effect to wear off. These are scientific facts. It is difficult, however, to state the facts as now agreed upon by the highest medical authorities without seeming to preach.

"In this day of keen competition every man need the highest possible development of his mental capacities. Not only is the highest mental development impossible in the presence of the continued use of alcohol, but impairment of the mental faculties is likely to follow. The children of those addicted to alcohol often start in life with morbid tendencies or mental defects.

"Other poisons, such as opium, morphin, and cocain, which, with alcohol, are the principal parts of many patent remedies, often weaken the mental powers and produce insanity.

"*Physical Diseases.*—Some mental breakdowns may be traced to the effects of other physical diseases. Typhoid fever, influenza, diphtheria, and some other diseases often so poison the system that for some time after the disease has left, the regular functions of the body are seriously interfered with. It is probable, also, that the poisons so produced interfere with the nervous system. Consequently, a mental breakdown is sometimes a delayed result of such diseases. Among other physical causes of insanity are tuberculosis and diseases of the arteries, heart, and kidneys. Aside from the direct physical effect of these diseases, they have a tendency to disturb the mind by discouragement. A person suffering from any such disease should have good nursing, skilled medical treatment, pleasant surroundings, and freedom from anxiety. Often these can be had only in a hospital. Prejudice against hospital care is largely unjustified.

"Overwork is often spoken of as a cause of insanity. This is not correct. Hard work alone rarely causes a nervous breakdown. It only becomes a menace to health when associated with worry and loss of sleep or causes mentioned under other headings.

"The control of infectious diseases, protection of food and water, temperance, healthful homes and factories—all these helps to prevent mental as well as physical diseases.

"*Mental Habits.*—Aside from physical causes, there are also mental causes. They are the most important causes of some forms of insanity. The healthy state of mind is one of satisfaction with life. This does not depend so much upon our surroundings, or how much money we have, or how many troubles come to us, as upon the way in which we train ourselves to deal with difficulties and troubles. Anyone who departs too far from this state of satisfaction must be regarded as tending toward an unhealthy condition. Of course, not all persons start with the same kind of mental makeup. Some, owing to heredity, unusual experiences, or bad training, have what is called a morbid disposition, but disposition is not something fixed, like the color of our eyes. It must be looked upon as made up of many tendencies, which often can be changed or modified by training and proper mental habits. *Health is a duty* which the individual owes to himself and to others. Mental health is as important as physical health. The average person little realizes the danger of brooding over slight injuries, disappointments or misfortunes, or of lack of frankness, or of an unnatural attitude toward his fellow-men, shown by unusual sensitiveness or marked suspicion. Yet all these unwholesome and painful trains of thought may, if persisted in and unrelieved by healthy interests and activities, tend toward insanity. Wholesome work relieved by periods of rest and simple pleasures, and an interest in the affairs of others, are important preventives of unwholesome ways of thinking. We should train ourselves not to brood, but to honestly face personal difficulties. We may not like even to admit the existence of these difficulties, but they are often the real cause of the brooding. To start doing something, to change the situations about which we fret, is the healthiest way to avoid aimless fretting. We should not hanker after the impossible, but learn to get satisfaction from what is at hand. We should not give ourselves up to day-dreaming, but try to do something, no matter how small it is. Delicacy or shame often prevent people from seeking advice, especially in regard to sexual problems, when such advice might be of the greatest service. Frankness should be encouraged by a sympathetic and helpful attitude toward those who are inclined to brood or seek solitary pursuits and pleasures to the exclusion of healthy social relations."

Manifestations of Insanity.—The former habits of thinking, feeling, and acting as compared with the present habits of an individual are the basis on which judgment as to the existence of insanity must rest. The difference between natural eccentricity and mental disorder is often difficult to distinguish and has occasioned no small degree of confusion. There is often a temporary departure from normal standards of action and thought, as in intoxication, shock following injury, etc., which does not constitute insanity. "The 'departure' may display itself in complete change of characteristics, tastes, and tendencies; in simple perversions of the feelings and judgments, or in an exaggeration of natural traits of character."

Disordered mental actions, or symptoms which indicate insanity, include the following: Illusion, delusion, hallucination, incoherence, delirium, undue elation or depression, dulness, or extreme apathy.

An **illusion** is defined as a false, exaggerated, or perverted perception of something which is really appreciated by the senses. The sense of sight may be perverted and lead one object to be mistaken for another; as, for instance, an article of furniture may be mistaken for a person or an animal. Or a patient may hear some one talking and insist that some one is plotting his death; he may taste his food and say that he tastes poison in it.

An **hallucination** is a false perception of something that is entirely imaginary and without foundation, or a deception of the special senses. If a patient imagines the room is filled with people when he is entirely alone or that some one has inflicted on him bodily injury, or that he hears, sees, smells, tastes, or feels something when there is no object such as he describes to be heard, seen, tasted, or felt, he is said to have an hallucination. Illusions and hallucinations themselves cannot become fixed, though often recurring.

A **delusion** is a false belief arising from diseased mental action. It is often the result of illusions or hallucinations, the false ideas arising from the false impressions becoming so fixed as to constitute a false belief which cannot be reasoned away. All false beliefs, however, are not delusions. Some are merely errors. If a patient says he is worth a million dollars when he is penniless it is not difficult to recognize a delusion. If he says a spirit visited him last night the existence of a delusion might be disputed. The test usually is the common opinion of those associated with the individual. A delusion is a condition in which illusions and hallucinations become fixed and are regarded as facts that cannot be reasoned away.

Incoherence is a grouping of words together without any idea of proper relation. It is also sometimes applied to actions which are disconnected or unrelated.

Delirium is a condition of mental disorder in which the delusion, illusion, flightiness of conduct, wandering speech, etc., are due to fever or infection. The nervous constitution of the individual has much to do with this form of mental affection, even a very slight rise of temperature in certain individuals being sufficient to cause "head symptoms." In a considerable number of cases morbid impressions remain after the fever has subsided.

Classification of Mental Diseases.—In the early history of scientific medicine two forms of mental diseases were recognized: the one characterized by intense mental excitement (mania), and the other by intense depression (melancholia). It has taken many hundreds of years to progress to the present methods of classification, in which the miscellaneous pathological excitements have been divided into different classes and traced to different causes. The first to be separated were the excitements, due to the acute diseases—typhoid fever, pneumonia, etc. Then the intoxication forms were set apart—excitements due to alcoholic indulgence. Later other forms were separated as medical men began to understand more clearly the working of the mind.

Insanity is a general term used to denote a "prolonged departure from an individual's normal standard of thinking, feeling, and acting."

Psychosis is a term used to denote any disease or disorder of the mind.

While the nurse has no need to spend much time or thought on the different classes of insanity that are now recognized, yet there are occasions when a knowledge of modern methods of classification may be helpful.

Burr divides insanity into the following classes:

Infection psychosis, which include fever delirium, post-febrile conditions, and simple neuritis.

Exhaustion psychosis, which include collapse delirium, which develops after a condition of prolonged sleeplessness, acute confusional insanity of sudden origin following exhaustive illness, etc.

Intoxication psychosis, which include dipsomania, lead poisoning, drug addictions, etc.

Insanities from disturbance of function of the thyroid gland.

Dementia is a general term "used to indicate loss or serious impairment of intellect, will, and memory." (Dorland). In dementia there is a general failure of all the intellectual powers. Weakness of mind is progressive, and is shown in loss of memory, dulness, etc. Of this class there are many varieties, such as alcoholic dementia, epileptic dementia, senile dementia, paretic dementia, etc., terms which need no special explanation.

In *dementia præcox*, a disease of early life, the predominant mental symptoms may be those of depression, excitement, or stupor. The insanity of puberty is included in this class.

In *paralytic dementia*, or general paresis, there is slowly increasing mental impairment, disorders of muscular movements, gastric and other nervous crises, and mental and physical decay. Syphilis is believed to be the main cause in the majority of such cases.

Dementia with paralysis, is a form of mental unsoundness produced by and depending upon previous damage to the brain by apoplexy, the occlusion of some blood-vessel cutting off the nutrition of certain parts of the brain, or cerebral degeneration in some of its forms. In such cases delusions are not frequent, but the patient's disposition changes. Irritability and a tendency to misconception of the motives of those associated with him are prominent features.

Manic-depressive insanity was formerly known as acute mania. Active excitement, alternating with depression and changing delusions, are characteristic of this type. There are usually lucid periods between the attacks, but the disease has a tendency to recur. In some patients only the maniacal phases are prominent, and there are still others when undue depression occurs, but rarely, or never, excitement.

Undue elation may be termed an exaltation, an emotional uplift, a condition of hopefulness, and undue pleasurable excitement.

Undue depression is the opposite emotional state to that of elation. The patient feels sad, miserable, depressed, apprehensive, inclined to be quiet, even suicidal. In both elation and depression there may be delusions.

In the melancholic state there is little activity and intense depression. Interest in surroundings is lost gradually. Worry over the past and future becomes habitual. The patient may be easily controlled, but suffers from hallucinations and illusions and lives often in a condition of much mental misery.

Paranoia is defined as "a form of disease occurring in one of congenitally defective nervous organization and marked by certain well-defined symptoms, which seem to be due to defects of development and frequently appear as an exaggeration of natural characteristics. One suffering from paranoia is from childhood somewhat peculiar. He may be bright and receptive in certain ways, learns readily at school, but shows eccentricities of conduct, is self-conceited, introspective, and develops asymmetrically. Without obvious exciting cause or with some slight cause, as a fever, a trifling injury, etc., he becomes suspicious. Mental depression may proceed to a considerable degree. . . . Many of the assassins of distinguished persons have belonged to the paranoiac class." (Burr.)

Many paranoiacs have been geniuses along certain lines, such as inventions, but lacked the ability to profit by their genius. Many others have attempted to become reformers or founders of new religious sects. They have been known as cranks. It is often difficult to believe them insane.

Idiocy is a condition in which the patient is born with a deformed or imperfectly developed brain, or in which development is arrested in infancy.

Imbecility is closely allied to idiocy; it is a condition of mental deficiency originating after birth, very frequently as the result of hydrocephalus. Occasionally it follows infantile convulsions.

CHAPTER XXXVIII

NURSING IN MENTAL DISEASES (Continued)

It will have been observed from the foregoing description of the varied types of mental diseases that one of four prominent conditions are usually present—mental excitement of varying degree, mental depression, fixed delusions, or mental weakness.

Observation in Special Cases.—It has been well said that "in the study of mental diseases it is much more important to observe each case closely, and gather together the distinguishing facts concerning it, than it is to give it a name and compel it to come under that head, when perhaps it presents certain features that make it difficult to put it in any of the well-defined groups." (Barrus.)

Definiteness in stating facts observed in the care of mental patients is even more important than in dealing with normally intelligent individuals.

To the uninitiated, the symptoms which might be characterized as "violent" and "noisy" may appear to be comparatively meaningless, and little difference in the manifestations as shown by different individuals may be noted. It will be found that these symptoms, or these excitements, take various forms in mental disturbances, and to the physician who understands the underlying conditions which give rise to the varied symptoms, the accurate recital of the exact things which the patient did may enable him to arrive at a fair understanding of the patient's condition even without seeing him. For instance, instead of recording "patient was very noisy all night," state that "patient talked incessantly all night, sometimes on religious subjects. Calls herself the queen of heaven—makes extravagant statements as to power which God has given her, refuses drink because she thinks it is poisoned, talks incoherently about a murder she imagines was committed in her own family, declares sometimes that she is God, exceedingly restless, and getting out of bed frequently." Compare these symptoms with the following: "Patient sprang from bed frequently, went to corner and carried on imaginary conversation over telephone, paced restlessly around the room, unsteady and stumbling in gait, muttered constantly about presence of snakes, rats, or insects which were about to attack him, banged on door, and called loudly for help to kill serpents." The one observation indicates a condition of acute mania, the other of delirium from alcoholic intoxication. So-called "occupation delirium" may assume a variety of forms, in all of which the patient may be restless, noisy, and violent, but the manifestations will be different in individual cases, and usually suggestive of some occupation recently engaged in by the patient. Driving horses, laying brick, adding columns of figures, running a sewing machine are typical manifestations of occupation delirium. Such patients usually have no knowledge of their surroundings, and though suffering from exhaustion are hard to keep in bed. It will be seen from the foregoing illustrations the necessity of accurate statements in the nurse's records if such are to have any special value. Facts, not inferences nor suppositions, are needed more than in normally intelligent cases, as little of value can be gleaned from the patient's own statements about himself.

Exhaustion delirium may occur after a prolonged mental strain, after protracted sleeplessness, after serious hemorrhage, after child-birth, and often after the acute fevers. There are changing delusions, confusion of thought, impulsive acts more or less violent, often refusal of food, and complete inability to comprehend the surroundings. In such cases the temperature is often subnormal, nutrition very poor, pulse weak and irregular, muscular tremor, more or less restlessness, and, usually, general bodily weakness. In such cases rest in bed is imperative. Forced feeding may be necessary; often a patient who has refused food for days when proffered by one of the family, will quickly and greedily partake of it if it is made attractive in appearance and flavor and tendered by a nurse or friend.

The general management in such cases is directed to improving the general condition by a variety of methods. Elimination is promoted by attention to bowels, kidneys, and skin. Sleep must be secured by some method; a warm pack is one of the most effectual. Some medicine to improve the heart action is frequently given. Such cases tend to improve as the general nutrition of the body improves. It is not uncommon for the cloudiness of mind to disappear quite suddenly.

Morphinism, a condition of mental derangement caused by excessive and prolonged use of morphin, is unfortunately a common form of insanity. In such patients the moral nature is slowly undermined. Little dependence can be placed on anything said. As the condition progresses, the patient becomes suspicious and indifferent to surroundings, friends, or responsibilities. Restlessness and activity increase as night approaches; these patients are emotional and irritable, while the insatiable demand for the drug increases. The first effects of the drug are usually pleasant, and the ability to think clearly and quickly is noticeable. This is followed, as the habit grows, by dulness and a slowing of the mental processes. Gastric symptoms are common. Neuralgia, dizziness, palpitation, profuse perspiration, and derangement of the special senses are not uncommon. Diarrhea and constipation may alternate. Most of such cases in time acquire other drug habits. Alcoholic indulgence and sometimes cocainism are complications.

Management.—In such cases rest in bed, separation from friends and home, light, nourishing, easily digested food are important. Some medicinal treatment is usually given; the amount of morphin is gradually decreased, such drugs are veronal, sulphonal, or chloral being substituted as needed to induce sleep. Massage, particularly of the lower extremities, to relieve the dull aching which accompanies the withdrawal of the drug, daily warm baths, and occasionally cold shower-baths for tonic purposes, are useful nursing methods in such cases. Three months is the least time in which such patients should be under close observation and isolated from friends, so that the system may be fortified against the craving of the drug. Six months is better, and in some cases a year will be needed before the patient can be trusted voluntarily to abstain from indulgence in the drug. Many never fully recover.

Cocainism.—In this condition delusions of persecution are common. The drug at first exhilarates, and the condition resembles that of alcoholic delirium, but the depression of the general system which follows is greater. Loss of weight and appetite, general languor or sleepiness, tremors, palpitations, and hallucinations of various kinds are common manifestations. It is stated that there are few uncomplicated cases of cocainism, and that many such victims have resorted to cocain to overcome the depression of morphinism. Many of this class of habitués carry dangerous weapons, believing they are being persecuted and will need to defend themselves. The will becomes gradually weakened, the memory fails. Ability to concentrate on any occupation for long at a time, insane jealousy, a growing suspicion of friends, and indifference to responsibility of any kind are characteristic of this condition. Wild, impracticable, or impossible schemes are not unusual. Such patients when suffering in the acute stage are liable to injure themselves or others, and require careful watching. The acute stage of cocainism lasts, as a rule, but a few weeks, but is apt to recur if the drug is indulged in. The general management is along much the same lines as in morphinism.

General paresis occurs in adults, and chiefly in those whose habits have been irregular or questionable, as previously stated. In the great majority of cases syphilis or excessive indulgence in alcohol, or the two combined, have been the causes. Its victims have frequently been intellectual men who have lived and worked for years at high pressure and exhausted the nervous force. It is much more common in men than in women. Degeneration in certain portions of the brain and spinal cord occurs. The disease attacks persons in middle life as a rule. In the early stages the patient is noticed to be visionary and erratic, irritable if opposed; makes foolish purchases, is often inclined to invest his life's savings in foolish commercial ventures, neglects his business, fails to keep appointments; his handwriting becomes irregular. There is hesitancy and thickness in speech and difficulty in formulating sentences, which often give to the onlooker the impression of one under the influence of alcohol. The face undergoes marked changes, the lines of expression are effaced, the memory is impaired. Such patients cherish most extravagant delusions, claim that they possess untold wealth, are able to perform feats undreamed of, occupy high positions, and delight in appointing other patients or their friends to positions of prominence. Sudden outbreaks of violence may be the first indication of the disease. The disease is hopeless, the general muscular weakness is progressive, and death usually occurs in from six months to two years. At times the disease appears to be arrested and some weeks or months of comfort may intervene.

Senile dementia is a disease of advanced life. It occurs as a result of the breaking down of the nervous system, arteriosclerosis, and general cell degeneration. Such cases suffer from depression and worry, become childish, memory fails, and restlessness, discontent, and abandonment of regular habits follow. They want to be doing something or going somewhere most of the time, and are apt to be so busy that they neglect to take sufficient nourishment, to empty the bladder, or attend to their personal wants in any way. Rupture of the bladder may occur if the patient is not carefully watched. Bodily pain is frequently complained of, and may or may not be real. Some of these patients are docile and can be cared for at home. Others are so troublesome and distressing that they have to be sent to a hospital.

Hysterical insanity is "a form of mental aberration characterized by very changeable emotions, weakened will power, and exaggerated self-consciousness, and with these there may appear from time to time certain attacks which present a variety of mental and physical symptoms, including dreamy states, numbness and other abnormal sensations, paralyses, convulsions, blindness in one or both eyes, taste and smell defects, and the like." (Barrus.) "The unchecked impulses of the hysterical patient may become to such an extent habitual that a true insanity develops." Such patients often threaten suicide, but rarely attempt it, but acts committed with the intention of gaining sympathy, attention, or creating alarm may have a fatal ending. Such patients are prone to exaggerate every symptom and invent new ones in order to create a sensation, are exceedingly sensitive to surroundings, often bright and interesting talkers, are exceedingly emotional, laugh and cry on slight or no provocation, and sometimes suffer from convulsive seizures or "fits" which resemble fainting to some degree. Heredity and environment figure largely in the production of this type.

Obsessions.—"Closely allied to hysterical insanity are those cases showing besetments or obsessions and dual personality. Morbid obsessions are of every kind and degree, and cause the lives of those they influence to be to the last degree wretched. Tormented by doubts, hesitant in performing acts, with possibly unimpaired judgment as to the proper course to pursue, such patients vainly battle against the horror of the bondage they feel and are deserving objects of commiseration." (Burr.)

Other types are possessed by fear—fear of the dark, of crowds, of meeting strangers, of disease or bodily injury, of contamination by dirt. The manifestations in the latter case may take the form of incessant washing of themselves. These patients realize the absurdity of their fears, but seem powerless to throw them off. Such patients are best cared for in a sanatorium, as recovery while among friends and relatives is practically impossible. Many are benefited by a modified rest cure and a tonic régime. When the general health is built up the emotional control may be reëstablished, but it usually requires months or years. The moral influence of an intelligent nurse is an important factor in the treatment.

General Observations.—It should always be remembered that, as a rule, some physical ailment exists in connection with the mental infirmity and that peculiarities of behavior are very likely to be exaggerated by such ailment. Many of the insane will make no complaint and appear unconscious of pain and illness which would be sufficient to prostrate a sane individual. "Patients with acute peritonitis have been known to dance and laugh merrily. Constipation is exceedingly common among females, is frequently associated with anemia and, indeed, helps to keep up that condition. In all such cases, but especially among epileptics, careful observations should be made regarding this condition." (Harding.)

"In excitement, as well as depression, there will frequently be found a state of autotoxic constipation and imperfect digestion, with malassimilation. An incredibly large proportion of nervous disease owes its existence to neglect of the bowels." (Burr.)

Abdominal affections in the insane are often very obscure. The first symptom of colic or diarrhea should be at once reported. The character of the diarrhea should be noticed, especially as to whether or not there is blood in the stool. Careful observations should be made regarding the existence of hemorrhoids, hernia, or abnormal discharges from any cavity or organ. In females the menstrual flow should be carefully observed, and any excess in amount, peculiarity, irregularity, and the appearance of special symptoms at or near that period should be reported.

Vomiting is a common symptom among the insane. Harding says, "There are idiots who can with ease regurgitate their food, and, indeed, like ruminants, appear to chew the cud. Some patients eat too rapidly or too much and vomit almost at will. Others, from hysterical ideas or sheer stupidity, will induce vomiting by putting their fingers down their throats.

The appearance of any nausea, paleness, or sweating before vomiting should be noticed; also whether the act was performed easily or with difficulty. The matter vomited should be examined for blood, foreign bodies, etc. Sometimes buttons, pieces of straw, or such articles are found. Attempts at vomiting are sometimes the only symptoms of strangulated hernia in dementia."

Perspiration when it occurs and any peculiarity concerning it should be observed; it is sometimes confined to one limb or one side of the body and is sometimes excessive.

Scars, marks, or bruises on the body should be watched for and reported.

Urine.—In taking charge of a new patient special attention should be paid to the urine. Difficulty in voiding may result from urethral stricture. When under strong excitement patients may neglect to empty the bladder at intervals. Many patients suffering from depression become indifferent and fail to void urine, others have some delusional ideas that it is wrong to urinate. In other cases, especially paresis, there is often inability to expel the contents of the bladder or lack of desire as the result of sensory paralysis. A distended bladder is not uncommon, and in a case of violent insanity is more serious than under ordinary conditions. If a struggle occurred, rupture of a distended bladder might easily cause a very undesirable and serious complication.

Some patients need to be watched that no foreign bodies are introduced into the urethra.

Teeth.—The condition of the teeth and whether or not there are artificial teeth is another point that should be noticed. The teeth should have a regular daily cleaning.

Appetite.—The state of the appetite and manner of eating are important points to be noted in each individual case. Those who bolt their food without chewing are liable to choke in their efforts to swallow large masses of unmasticated food. The quantity of fluid should be noted and regulated whenever possible. Refusal of food frequently occurs, and much patience and tact are needed in dealing with such conditions.

Mental Symptoms.—As previously observed, in practically *all* insane patients either undue elation and mental excitement or undue depression or mental weakness is a prominent feature. The degree of excitement or elation or depression or weakness varies in the same individual from time to time, and is exaggerated often by very slight causes. Increase or decrease of restlessness or activity or uneasiness, of inattention, irritability, or incoherence should be noted. Very often it will be found that "irritability is an expression of physical pain of which the patient does not complain. Its source should be looked for in sleeplessness, headache, aching teeth, abdominal pain, constipation, distended bladder," etc. In cases of melancholia the symptoms of depression, stupidity, inertia, indifference vary from time to time. In such cases suicidal impulses are frequent.

It should always be remembered that no plan of management will apply to all cases. In dealing with the insane each patient must be dealt with and studied as an individual; each one is to a large extent a law unto himself. To build up the general health is highly important.

Sleep is more of a problem among the insane, though not less important as a curative and restorative agent, than in other forms of illness. The demand for medicine that will quiet the patient seems imperative many times, especially when in close contact with other patients or in a home in which the family are disturbed by violent noise. In this connection Burr says: "It can be said positively and without qualification that remedies directed to subduing the patient, depressing drugs, hyoscyamin, conium, the bromids, etc., do no permanent good and are often productive of harm. The quiet they bring is at the expense of strength. It should not be forgotten that, however much strength may be manifested in excitement, this is largely fictitious. To restrain muscular activity by the use of drugs is not curative. There is brain exhaustion to deal with, and the rapid combustion of nervous tissue must be met by sustaining remedies and those which promote nutrition, rather than those which lower the heart's action or act directly as paralyzers of muscular activity. In the daytime, therefore, it should rarely be attempted to produce sleep by the use of drugs. Natural sleep—that which comes spontaneously or follows a hot bath, a glass of malted milk, or a salt glow and massage—should be favored at all times, whether day or night, but hypnotic drugs should be avoided if they can possibly be dispensed with, and should be used when necessary only at night."

Medicines.—In the administration of drugs resort must frequently be had to the rectal and hypodermic methods, though tact and patience will often prove successful in obstinate cases. Sometimes a patient will utterly refuse to accept medicine from one nurse and will take it without protest from another. Forcible opening of the mouth or holding the nose are not regarded as desirable methods in dealing with such patients if possible to be avoided. Whenever possible it is better to give remedies in liquid form. If a patient refuses because he believes a medicine is poisoned, the nurse can often disarm suspicion by tasting the dose in his presence or letting another taste it.

Temperature taking is not frequently a routine daily practice in the management of insane patients, but the nurse should always remember that mental symptoms may mask the existence of serious disease, such as pneumonia or other fevers, and should be on the alert to recognize variations in temperature. In some hospitals for the insane it is a rule to take the temperature of each new patient daily for two weeks following admission. It is rarely wise or safe to put the thermometer in the mouth of an insane patient, especially without knowing what his habits and tendencies are. The thermometer is liable to be broken and the glass swallowed. Cases of maniacal excitement or of profound depression are the ones in which the risk is greatest.

Exercise.—While rest in bed in certain cases and stages is of great importance, it is quite as important to recognize the importance of judiciously managed exercise—exercise adjusted to the patient's strength and needs. The physician's orders will cover this point, but, as in many such cases daily visits are not made by the physician, the nurse needs to exercise much judgment regarding this matter from day to day. As much care is necessary as in dealing with infants, in regard to suitable clothing, avoidance of exposure, dampness, or fatigue, or the hot glare of the summer sun.

"In maniacal excitement unless the strength is too much reduced walks are frequently well borne and profitable. The restlessness of mania must have vent. To repress it too much is to intensify excitement and do the patient harm. In the occupation of walking out of doors there is a diversion of the nervous energy into healthful channels. The sleep and appetite are better and all the bodily functions are more satisfactorily performed in consequence of it. Fresh air in abundance is introduced into the lungs; the blood is more rapidly and perfectly oxygenated—it is of a more favorable quality to nourish the brain. The bodily secretions are quickened."

In cases of depression the tendency is for patients to object to taking exercise, a tendency that needs to be tactfully and firmly combated.

Food.—In the care of the insane feeding is probably the most important of the nurse's duties. If she fails in persuading her patient to take suitable food and shows her inability to deal with the feeding problem, great is the failure. The body, including the brain, can only be built up and restored as nutrition is supplied to it. It is rare that a patient suffering from some form of acute insanity will eat sufficient without attention and he may forcibly refuse all food. A great many of such patients believe that their stomachs will not tolerate food. Others think all food is poisoned or that they cannot swallow or that some spirit tells them not to eat. In the methods of feeding it is always best to choose first or try the most natural method practicable. A neat tray may be accepted without difficulty if pains are taken to prepare it in the most attractive manner possible. Many of such patients are debilitated, and require milk and eggs in abundance to be administered, in addition to regular meals. Referring to devices which have proven successful in dealing with patients who refuse food, Burr says: "Certain patients will take liquid food in small quantities where solid food is altogether refused. A patient having delusions of poison may accept eggs boiled in the shell or potatoes baked in the skins, particularly if the cooking goes on in his presence. One who ignores the request of his nurse or physician may eat in obedience to that of some fellow patient. One will eat if left alone and apparently unnoticed.

Another will take food if he can acquire it surreptitiously, and opportunity should be afforded suspicious patients to thus appropriate it. One will eat crackers or bread or fruit if placed in his pocket. Another will exchange plates with a neighbor and take the food prepared for him, believing that no poison has been introduced into that particular plateful. One believing it wicked to eat will often take food if it is forcibly placed in the mouth—the least show of force being all that is necessary to effect the entrance of the spoon. Under this coercion she feels that she escapes responsibility for the doing of that which her conscience disapproves. In giving food, as well as in bestowing other attentions upon suspicious patients, an affectation of indifference is often very efficacious. Mechanic feeding should be the last resort."

Tube Feeding.—When tube feeding must be resorted to a wooden wedge is placed between the teeth. If the patient does not resist it will be sufficient to have an assistant to steady her by holding the hands and place the tube, well oiled, into the mouth and against the throat and direct her to swallow. If she refuses to swallow the throat may be tickled with the tube, and when a gagging movement takes place the end can be directed past the epiglottis. Once past that point the tube should meet with no obstruction. When it has reached the stomach wait till breathing is easy and natural and pour the fluid into the funnel at the end. If the patient struggles much several assistants may be needed. The patient should be placed sitting in a chair, with one person kneeling behind holding the patient's hands down and behind the chair. Another assistant should stand by the right side of the patient holding the head resting in the left arm against the body with the left hand under the chin. This assistant may with the right hand place the plug between the teeth. Extremely violent cases may require an additional assistant to hold the feet or steady the chair, and such cases will call for great care.

Another method of forced feeding is thus described by a nurse of long experience in dealing with the insane:[1]

"When a patient resists, or will not swallow, or spits out food, there is nothing left but to force feed, and, briefly, the method may be described.

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[1] L. Catlin.

"The things necessary and the principles to be remembered upon which success depends are as follows: A porcelain feeder with a long nose, a wooden wedge to use as a gag (or a clothespin may serve the purpose), some towels to protect the gown and bedclothing, the amount of nourishment, medicine, and water to be given, and three or four pairs of hands. It is needless to say the nourishment must be in liquid form, and nothing but milk or eggs are worth while in this procedure.

"The principles are these: the patient is lying flat on the bed, without pillow, the nose held, the cheeks and lips held out to form reservoir, and, if necessary, to keep teeth apart, the wooden gag between the back teeth. This last will not be necessary unless the patient tries to spit out the food, or gurgles it, or attempts to vomit. If the nose is held, thus shutting off the ingress of air, and the lips and teeth are held so they cannot come together, and the reservoir is partly filled with liquid, the patient *must* swallow before a breath can be taken. Keeping just about so much liquid in the mouth by pouring carefully, and slowly, from the feeder, the act of swallowing will be kept up. It is not necessary to put the feeder into the mouth; use it only for pouring, and let the stream strike the teeth, tongue, or cheek, no matter where; the important thing is to keep the mouth about half full of liquid. Whatever you do, never give up; if it takes half an hour to give a glass of milk and one of water, stick to it. Do not be too serious or sober about it. Jolly with the patient, talk to him, let him talk to you if he wants to; he will swallow better then. Let the nurses or assistants engage in conversation among themselves; it helps to divert the patient's mind and his swallowing becomes automatic. Do not be discouraged if you do not succeed as well as you wish the first few times. Persevere, and learn to meet the emergencies as they come up. You will be confronted with something new with every patient you attempt to feed, but remember the principles and proceed. Often a stubborn patient will take food readily after a few such feedings; he has found out that you are master, and the easiest and quickest way out of the food question is voluntary administration.

"There is almost no danger in feeding in this way; the patient does not choke, but if you are easily frightened about it and release your grasp anywhere, it means victory for him and a harder battle for you next time."

Nasal feeding is preferred by many as being less unsightly, less dangerous, and more humane than forced feeding by mouth.

Experience has shown, however, that tactful nursing with repeated efforts will render forced feeding unnecessary. It is hardly necessary to mention that in patients who have manifested dangerous or suicidal tendencies, knives, forks, and similar articles should be carefully guarded. The irresponsibility of such patients should never be forgotten.

Baths are largely used in dealing with this class of patients for therapeutic purposes, and their value is becoming each year more fully recognized. The technic does not differ materially from that used in dealing with sane individuals, though usually more difficult to manage. All such patients should at least have a weekly bath for purposes of ordinary cleanliness, and many will require several baths every day. Patients who are very fleshy and who perspire much are liable to chafing of the skin in the groin or under the breasts or arms, and require extra attention. In those unable to attend to themselves in ordinary daily cleanliness the hands require special attention. Many cases of diarrhea among the demented class can be avoided by having the hands washed before each meal. The condition of the teeth and mouth needs attention also, especially in acute cases. Many insane patients are fastidiously neat and clean, but a larger proportion are the opposite and require unceasing vigilance in matters of cleanliness. In cases in the stage of violent excitement, the prolonged bath is used with excellent results and is one of the most important remedial agents.

Clothing is a matter which requires constant attention in this form of illness. Many patients will lay aside warm clothing and suffer with cold. Many of them have peculiar notions about clothing which must be tactfully and firmly combated. At the very beginning of a case it is better to insist on the patient wearing a proper amount of clothing whatever his notions may be. Delay in such matters is likely to increase the difficulty, besides being dangerous in other ways. In cases of acute dementia, melancholia, or in any patient in whom circulation seems sluggish and feeble, special care to keep them warmly clad is needed. Patients who wilfully destroy their clothing are frequently met with and create a special problem. Some of these are wilfully destructive. Others, especially cases of restless mania, do it because they cannot keep still and there is nothing else for them to do. In this latter class some form of occupation can often be substituted that will supply the needed outlet for their energy and activity. It may be a very useless employment and yet serve a useful purpose. The nurse who is resourceful will find means of keeping uneasy, restless hands busy. The ability to induce patients to engage in some employment and keep them interested is a point of special value in a mental nurse.

Occupation and Entertainment.—These are useful aids toward recovery, just as is exercise. "Through them healthful topics of thought are introduced to displace those of a morbid character; the muscular action is diverted from unhealthful into healthful channels; voluntary control is stimulated; the ability to fix the attention is increased; restlessness, disorder, and destructiveness are diminished. Sleep, appetite, and bodily functions are improved. As my experience increases, says Burr, "I am more and more convinced of the practicability of employing almost all patients no matter what their mental condition may be—save those, of course, enfeebled in body from paralysis or other cause—in some line of work. The employment may be simple, but will be found sufficient to contribute materially to the welfare of the patient and that of others. Knitting is an employment of great value. By introducing variety (not too much variety, but a little diversion and change) into the daily lives of our patients we are helping mental action, substituting new topics of thought and widening the mental horizon."

Books.—Regarding books suitable to provide for the insane the following suggestions are made by an officer in a hospital for the insane who has given the subject much study: "Optimistic stories of real life, certain books of travel, a few, biographies, a sprinkling of outdoor and nature books, humorous books—any books which are cheerful in tone, true to life, but not teaching any one moral lesson more than another—books which have good type and good illustrations, promise the best results. Books on hypnotism, spiritualism, and religious books generally are harmful and even dangerous. There are always educated persons among the insane whose needs in regard to books should have special consideration."

Violence.—Force of a mild character in dealing with insane cases cannot always be avoided. It must be resorted to sometimes. But unnecessary or hurtful force becomes violence, and violent handling of patients is prohibited. In some States legislation prohibiting mechanic restraints has been sought. In any case no effort should be spared to train all who have the care of the insane how to govern without physical force. The use of tact will render forcible handling very rarely necessary. In dealing with the insane tact resolves itself into the ability to secure obedience without the use of force or harsh usage of any kind. In a hospital for the insane, struggles, resistance, and complaints are matters which are anticipated and concerning which there are definite rules. The following rules are recommended by an officer in a large State hospital for the insane:[1]

1. Avoid a struggle whenever possible.

2. Avoid anything like an equal struggle if possible. Get all the help available.

3. If you know you are liable to have a struggle get the help first if possible. There is no credit in trying to control a patient with just "help enough." There is always a greater danger of injury, and there is less of conservative counsel, and there are fewer witnesses.

4. Avoid coming on the floor with a patient. If a man patient resists and wrestles with the nurse there is a great tendency to come down on the floor. The more nurses helping the less danger of this.

5. Avoid coming with weight upon the patient's body. Four-fifths of the accidents of importance are of this character. Avoid even the appearance of such weight. Upon the stomach

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[1] Dr. R. M. Phelps.

and abdomen such weight is of especial danger, and the accidents which have occurred make this keenly felt.

6. In holding a patient who struggles try to do so in a way which will avoid complaint. The hands of the patient are under far better control when held behind the back, but be very careful to not "lift them up" or "twist" them during the struggle.

7. Get as many witnesses as possible. Get them before the effort if possible—get them soon after if it be the best you can do. Get them for witnesses, for consultation, and general help.

8. Use some mechanic restraint if caught in a case of emergency. But get authority for such use as soon as practicable, as its use without authority is not justified. Use it always as something to be omitted at the earliest possible moment.

9. If there is any chance of a complaint make the fullest possible notes on the occurrence, that they may be used later if needed. Give all witnesses and details.

Such rules as the above are in a general way applicable in private use as well as in hospitals.

Mechanic Restraints.—In modern usage the "restraint sheet"—a strong duck sheet, with lines of cloth with which to tie to the bedstead—is the most common and favored form. It leaves the patient lying in bed, in a position of resting. It allows a moderate amount of turning. It is less objectionable to the sight than many other methods of restraint. For lesser restraint a jacket is probably as unobjectionable as any. Ducking is made into waist shape, and the sleeves are elongated so that they can be tied about the body. The legs are ordinarily free. Muffs made of leather are to be avoided, leather mitts also. Other contrivances, especially if of leather and with buckles, are offensive and should be prohibited. Anything tending to suggest criminal appliances it is worth great effort to avoid. The nurse should usually be able by using her brains and general resources to get beyond the necessity of using restraining appliances.

Important Points in Mental Nursing.—The recovery of patients suffering from acute mental disorders is to a considerable degree dependent on food and sleep. The latter is often dependent on the former. Because of continued excitement and muscular activity tissue waste is very rapid and feeding becomes of paramount importance.

Success in feeding the insane calls for perseverance, persuasion, tact, patience, good judgment, good humor, hopefulness, firmness. It depends on the nurse more than on the doctor.

It is well to remember that many insane patients are especially susceptible to the effects of changes of temperature. Even a slight fall in temperature may conduce to bronchitis, diarrhea, and other complications. In cases of senile dementia this point needs special watchfulness.

The personality of each patient is a subject for special study—a more difficult study by far than the technic of general nursing duties.

"The recovery of patients is promoted by building up the general health, correcting pernicious habits, and checking morbid impulses. To build up the general health there are necessary good food, exercise, abundance of sleep, and, possibly, medication.

"In the care of the insane punishment should never be employed. Scolding or harsh language should never be indulged in.

"Make requests; do not command. A request pleases; a command antagonizes.

"Be sure of the right and propriety of a course in governing patients and then consistently pursue it.

"Avoid too much talking; heed reasonable requests; take a firm and judicious position and maintain it.

"In the matter of delusions be frank, but do not antagonize. Never try to argue with an insane patient.

"Many insane patients are as susceptible as little children to rewards, and this point can often be used in promoting neatness and correcting bad habits.

"When an excited patient is breathing out threats of slaughter and brandishing some weapon which he has obtained it is well to remember that a mattress makes a very good shield behind which he can be approached and overpowered."

NOTE.—The student is urged to avail herself of complete works on the care and nursing of the insane, of which there are many excellent text-books for nurses. Comparatively few nurses practice their calling many years without having to assume for a longer or shorter period the care of some patient who is mentally deranged, and a general knowledge of the principles of management of such patients is desirable for every nurse. A little book which the author has found of special value is the "Primer of Psychology and Mental Diseases," by Dr. C. B. Burr, from which quotations have been freely made in arranging these studies. Another book, more recent and exceedingly valuable and practical, is "Nursing the Insane," by Dr. Clara Barrus.

NOTES

NOTES

SECTION V

QUESTIONS FOR SELF-EXAMINATION AND REVIEW

SECTION I

CHAPTER I

1. Define disease; self-limited disease; functional disease. What is a predisposing cause of disease?

2. What do you mean by the terms diathesis; etiology; diagnosis; asthenia; atrophy; prognosis; lesion?

3. To what do the prefixes "*hemo-*," "*hydro-*," "*pyo-*," "*hyper-*" relate?

4. What are symptoms?

5. State five methods of making an examination, and explain what each method consists of.

6. What should a general history of a patient include; a family history; a present history?

7. How may diseases of the solid structures of the body be produced?

8. Show how diseases may result from obstruction.

9. How may atrophy and hypertrophy of tissue be produced?

10. What are exudates; calculi?

11. What do you mean by physical depression, and how may it be caused?

12. Describe some important changes that may take place in the blood in disease. How may diseases terminate?

13. What do you understand by the auto-infection? How may it be caused?

14. What is pain? Describe four different kinds of pain.

15. What kind of pain would you expect to find in a case in which pus was forming?

16. What points would you notice about the mental condition, facial expression, eyes, and skin of a new patient?

17. In nursing a case of digestive disease what points should be noted?

18. What may be learned from observation of bowel discharges regarding the condition of the digestive system?

19. In observing the condition of the urine what points are worthy of record?

20. Describe some important nervous symptoms which are worthy of record.

CHAPTER II

21. What do you understand by the term fever, specific fevers, eruptive fevers?

22. What symptoms are characteristic of fevers in general?

23. What are the five stages of specific fevers? Tell when each begins and ends.

24. Describe Koch's circuit. Who was Koch?

25. (*a*) Explain the term "typhoid state." (*b*) What causes fever and what constitutional results does it produce?

26. How would you isolate a patient suffering from an infectious disease in a small house? Mention some general precautionary and hygienic measures you would adopt.

27. What are some advantages of water treatment in fever? Why is it necessary to give water freely in all fevers?

28. In the feeding of fever patients what is the most important element in diet? How may this element be supplied?

29. What is typhoid fever, and how is it spread?

30. Name some of the common complications of typhoid fever.

31. What is tympanites? What measures would you use to guard against it and also to relieve it?

32. Describe the symptoms of intestinal hemorrhage. What would you do in a case of this kind?

33. Name some of the causes of perforation, and state in what class of patients it is most likely to occur.

34. Describe your methods of prophylaxis.

35. Name the most important points in the management of convalescence after typhoid fever.

36. Prepare a bill of fare for a typhoid patient for a week, beginning the fourth day after temperature has remained normal.

CHAPTER III

37. Define diphtheria and give causes and symptoms.

38. How may infection in diphtheria be communicated?

39. What complications and sequelæ may be feared?

40. Describe the common methods of treating the disease.

41. What effects would you expect to follow the administration of antitoxin?

42. What measures would you use to avoid heart failure?

43. (*a*) Give the most important rules for prevention of the spread of diphtheria. (*b*) Mention some practical rules you would recommend to avoid taking and carrying infection.

44. What are the characteristic symptoms of scarlet fever?

45. What complications are most to be feared in scarlet fever and what measures would you use to prevent them?

46. Describe your general methods of managing such a case in the acute stage.

47. What precautions would you observe during convalescence?

48. What is rheumatic fever? How would you disinfect after a case was concluded?

49. What drugs are most frequently used in this disease, also what diet? Describe the general nursing of such a case.

50. Write a short paper on malarial fever, giving its causes, symptoms, general characteristics, and the methods of avoiding it.

51. Tell what you know of the causes, symptoms and prevention of typhus fever.

CHAPTER IV

52. Give the causes and general characteristics of cerebrospinal fever.

53. How is the disease commonly treated? What precautions would you use to prevent the spread of the disease?

54. Describe the general nursing management of a patient

suffering from infantile paralysis. Mention four important points to be observed in the acute stage.

55. Write a paper on measles, stating causes, symptoms, and general methods of management in that disease.

56. What complication is most to be feared in measles, and how would you guard against it?

57. What symptoms would lead you to suspect whooping-cough, and what are the common complications of that disease?

58. Outline a hygienic régime for a child with whooping-cough. What nursing measures would you use with a view to lessening the spasms of coughing?

59. How is the contagion discharged from the body in a case of small-pox, and by what channels does it gain entrance to the system?

60. Describe the general methods of management in such cases.

61. What do you understand by the term "palliative and supportive treatment?"

62. What is yellow fever, and how may it be communicated?

63. Describe the general methods of management during convalescence after any of the acute infectious diseases.

64. Outline a convalescent diet for a case of pneumonia for three days, beginning the day after the temperature drops to normal.

65. What discharges would you disinfect in dealing with the following diseases: Typhoid fever, pneumonia, malaria, measles, whooping-cough, scarlet fever?

66. What advice with a view to prevention would you give a person who feared typhoid fever, pneumonia, measles, scarlet fever, small-pox, malarial fever?

CHAPTER V

67. Give a short description of the respiratory system.

68. Describe the common methods of physical examination in respiratory diseases.

69. How may the nurse assist in such examinations?

70. Describe some characteristic changes that take place in respiration in diseases of the lungs.

71. What are râles; mention the different kinds of râles and tell in what conditions they occur?

72. Write a short paper on sputum, describing the changes that may occur in it, and the important indications.

73. What is pneumonia? What are the predisposing and exciting causes?

74. What symptoms would you expect to find in a case of pneumonia?

75. What complications are most to be guarded against in pneumonia?

76. What is ether pneumonia, and how may it be caused?

77. Describe the general management of a case of pneumonia.

78. Name ten important nursing points in this disease.

79. What would you regard as favorable and unfavorable symptoms?

80. What are the general methods of management of a case of capillary bronchitis?

81. What is bronchitis, and what is the chief danger in this disease?

82. Describe the usual treatment.

83. Explain the general conditions present in asthma.

84. What may a nurse do to relieve the spasms of asthma?

85. Explain what is meant by congestion of the lungs. How may hypostatic congestion be caused?

86. What would you do in a case of hemorrhage of the lungs?

87. Write a short paper on pleurisy.

88. Define emphysema, pneumothorax, hay fever.

CHAPTER VI

89. What is tuberculosis? State the cause and mention some varieties of the disease.

90. What conditions predispose to this disease?

91. Give a general description of the condition of the lungs in pulmonary tuberculosis.

92. What symptoms would you expect to find in a case of incipient tuberculosis?

93. By what channels may the germ of tuberculosis enter the body?

94. How is the disease usually communicated?

95. Outline a hygienic régime for one who has inherited a predisposition to tuberculosis.

96. What occupations should be avoided by those who inherit a tendency toward tuberculosis? State some occupations you would recommend.

97. Give the four most important elements in the treatment of tuberculosis.

98. How would you arrange for this treatment to be carried out at home; in a city; in the country?

99. What precautions would you observe in starting the fresh-air treatment?

100. What rules regarding exercise, rest and diet would you think should be observed in this disease?

101. What measures would you use in case of hemorrhage in pulmonary tuberculosis.

102. What simple measures may be used to lessen and relieve attacks of coughing?

103. What preventive measures should be used in dealing with this disease?

104. Show why sunshine and good ventilation are important even in advanced stages of tuberculosis.

105. What diseases are most likely to be followed by tuberculosis?

106. In what places is the danger of infection greatest?

CHAPTER VII

107. What important digestive fluids are secreted by the stomach, pancreas, and liver, and on what class of foods does each fluid act?

108. What do you understand by the term functional digestive disorder? Give one or two examples.

109. State four common causes of such disorder.

110. What effect is imperfect mastication of food likely to have on digestion and on the digestive organs?

111. Show how the nervous system may influence digestion.

112. Explain how the condition of the blood and circulation may affect digestion.

113. What effects do exercise and rest produce on digestion?

114. Give a brief description of Fletcher's system regarding diet.

115. What general symptoms are included under the terms dyspepsia and indigestion?

116. How is it possible to gain accurate information regarding the quality and quantity of the gastric fluids?

117. Explain what is meant by hypersecretion. Show how this is sometimes caused and how restrained.

118. What results are likely to follow gastric dilatation? What kind of diet is often prescribed in such cases?

119. Name some of the causes and symptoms of acute gastritis and some important nursing points in such cases.

120. What is a peptic ulcer? What causes it?

121. Describe the general care of such patients.

122. What general measures are commonly used in dealing with persistent vomiting?

CHAPTER VIII

123. In what part of the digestive tract does food come in contact with bile and pancreatic fluid? What is chyle?

124. Give the general causes of constipation and give suggestions for overcoming it.

125. Show how constipation may lead to diarrhea.

126. Give a list of foods which are useful in overcoming constipation, and a list of foods that should be avoided by those subject to this ailment.

127. What is meant by intestinal auto-infection? How is it caused? How avoided?

128. Give the common causes of catarrhal enteritis.

129. Outline general methods of management in such cases.

130. What is mucous colitis? In what class of patients is it most likely to occur? Outline a hygienic régime for a person suffering from a mild case of mucous colitis.

131. How may intestinal parasites gain entrance to the system? What general measures would you recommend in cases of that kind?

132. What general conditions are present in hookworm dis-

ease? Mention the common preventive measures used in combating it.

133. State some causes that are believed to result in appendicitis. Give symptoms.

134. Show how overeating and overdrinking may indirectly cause appendicitis. Outline a diet for a person subject to recurrent attacks.

135. What is st [illegible] a? What symptoms would lead you to suspe [illegible] ns? Give some important nursing points in s [illegible]

136. What is bil [illegible] v may it be caused?

137. What are [illegible] ive some conditions which predispose to the f [illegible] ies.

138. What symp [illegible] u expect to find in a case of gall-stones?

139. What general measures may a nurse use to relieve pain in such cases?

140. Explain what is meant by cirrhosis of the liver and what general conditions are present in such cases.

141. How is acute general peritonitis usually caused and what symptoms would lead you to suspect such a condition?

142. Describe the general methods of management in such cases.

CHAPTER IX

143. Name and locate the urinary organs and state the functions of each.

144. Give a brief description of the kidneys. What is the pelvis of the kidney?

145. What changes occur when inflammation exists in the kidneys?

146. What is albuminuria? Show how it may occur. Is it a serious indication or otherwise? How would you test urine for albumin?

147. Explain what is meant by functional albuminuria. How are such cases usually managed?

148. Give the general symptoms of nephritis. What diet is usually prescribed in acute nephritis, and why?

149. Write a list of hygienic suggestions which would be helpful if observed in cases of chronic kidney disease.

150. Define uremia and give symptoms and general methods of management.

151. Name three important nursing points in the management of nephritis and uremia.

152. What is Bright's disease? What changes occur in the system as the result of this disease?

153. Name some causes that are believed to have acted directly or indirectly in producing floating kidneys.

154. In nursing a case of nephrorrhaphy what points need to be especially guarded against to prevent the operation being a failure?

155. What is a renal calculus; oxaluria; lithemia: pyelitis; a renal cast?

CHAPTER X

156. Explain the terms metabolism, catabolism, anabolism, hormone.

157. What glands are usually spoken of as "ductless glands?"

158. Tell what you know of the influence of each on nutrition.

159. What symptoms would you expect to find in exophthalmic goiter? Outline the nursing management of such a case if treated without operation.

160. Write a short paper on the nursing of the aged. Mention points which you think should be given special emphasis.

161. What general measures would you recommend with a view to the physiologic reduction of fat in obesity?

162. State the common causes and methods of prevention of gout.

163. Outline a hygienic régime for a person who is subject to rheumatism.

164. What is pellagra? Mention some characteristic features found in pellagra and some conditions which predispose to the disease.

165. Write a short paper on diabetes mellitus, and include in your paper explanation as to wherein it differs from diabetes

insipidus. Outline a bill of fare for three days for a patient suffering from diabetes mellitus.

CHAPTER XI

166. Show how the composition of the blood may be altered in disease. Define le nia, hemoglobin.

167. What sympt xpect to find in a case of chlorosis?

168. What kind tions would you advise anemic persons to se

169. Define purp Explain what is meant by "compensation" is.

170. Mention som which you would regard as important in the ca c diac patients. What general principles in regard to diet should be observed in cases of heart diseases?

171. What is meant by "Schott exercise treatment"?

172. What rules regarding baths should be observed in cases of valvular disease of the heart? Give some reasons for such rules.

173. Define regurgitation, pericarditis, endocarditis. What disease frequently precedes endocarditis and pericarditis?

174. Explain what is meant by angina pectoris. What would you do to relieve a patient in a spasm from that disease? What preventive measures should be used by one who is subject to attacks of angina pectoris?

175. Recommend a hygienic régime for patients who have chronic heart disease, but are not confined to bed.

176. Outline the principal nursing points in a case of cardiac dropsy.

177. Explain the terms palpitation, rapid heart, slow heart, aneurism, phlebitis, embolism, arteriosclerosis. How may thrombosis terminate? Name two nursing points of special importance in thrombosis.

SECTION II

CHAPTER XII

178. What parts of the human system are concerned in the study of obstetrics and gynecology?

179. Describe the bony pelvis. Tell wherein the female pelvis differs from the male pelvis and name the important joints of the pelvis. Define symphysis pubis, acetabulum, ilio-pectineal line.

180. Name the organs contained in the female pelvis. State their relative position to each other.

181. Describe the uterus and state its functions.

182. Describe the ovaries and state their functions. What is ovulation?

183. Where are the Fallopian tubes? What are their functions?

184. Name the external genitals in the female. What is the vagina and where is it situated? Where is the cul-de-sac?

185. What and where is the peritoneum; the perineum?

186. Where are the round ligaments and the broad ligaments?

187. What and where are the mammary glands? Describe their structure.

CHAPTER XIII

188. When does the period of pregnancy begin and end? What is its usual duration?

189. How would you reckon the probable date of an expected birth?

190. Define conception; labor; placenta; chorion; decidua; quickening; striæ.

191. What is the function of the placenta? Give a brief description of it.

192. What general changes take place in early pregnancy?

193. What symptoms would you expect to find in the first three months of pregnancy?

194. What three symptoms are regarded as positive signs of pregnancy?

195. What general measures would you recommend to overcome constipation during pregnancy?

196. Outline a hygienic diet for a pregnant woman.

197. Why are meats usually restricted in such cases?

198. What rules would you caution such patients to observe regarding clothing?

199. Why is freq [illegible] examination of the urine desirable during pr [illegible]

200. Name som [illegible] h you would regard as danger signals duri [illegible]

201. What advic [illegible] e regarding exercise and baths in pregnancy [illegible]

202. What atte [illegible] dvise to be given to the nipples during preg [illegible] sons.

203. If consulted regarding preparations for the birth what articles would you suggest be provided for the mother; for the baby; for general supplies?

204. What outfit should a nurse provide for herself for use in obstetric work?

CHAPTER XIV

205. Explain the terms normal labor; stages of labor. Tell when each stage of labor begins and ends.

206. Define mechanism of labor; position; presentation.

207. What are true and false pains? What symptoms would lead you to think labor had begun?

208. What is the "bag of waters"? In a normal labor when should it be expected to rupture?

209. How would you prepare the patient for labor, also the room and bed?

210. How may infection take place in an obstetrical patient? How would you guard against it?

211. Describe the technic which you have been taught to observe.

212. What preparation does nature make for the birth?

213. What assistance may a nurse give a patient in the second stage of labor?

214. How would you manage a normal labor if obliged to do so in an emergency?

215. What measures would you use to prevent laceration of the perineum; hemorrhage; infection of the baby's eyes?

216. If the baby does not cry at birth what would you do?

217. How would you manage the third stage of labor? When is ergot usually given in such cases and why? What dose would you give?

218. How may the nurse assist the physician in the different stages of labor? What may a nurse do to render labor more tolerable for the patient?

CHAPTER XV

219. When does the puerperium begin and how long does it usually continue?

220. Explain the terms involution; subinvolution. What is lochia?

221. Describe the changes that take place in the lochia in the first week in a normal case. What would you regard as danger signals in connection with the lochia?

222. What care would you give the mother in the first day, beginning at the birth of the child?

223. What is the colostrum? Why is it important for the baby to have it?

224. What simple measures would you use to relieve retention of the urine in the mother before resorting to catherization?

225. Of what use is an abdominal obstetric binder? How should it be adjusted?

226. What general care would you give the breasts every day during puerperium? Give reasons. What causes after-pains? Do they occur in all puerperal cases? If very severe, what would you do to relieve them?

227. How often should an obstetric patient's bowels move? How would you regulate this matter?

228. Describe a well-kept report of an obstetric case.

229. Write a bill of fare for the first three days following the birth of a child.

230. What changes would you make in the diet if the flow of milk was excessive or scanty?

CHAPTER XVI

231. Describe your method of caring for the newborn infant for the first hour after birth.

232. Give reasons why the first bath may properly be delayed a few hours

233. How would first bath?

234. Give gener ding the care of the cord. At what time does e?

235. Explain ho band should be adjusted on the newborn.

236. What rules ve regarding giving water to the newborn ba

237. What is t What changes would you expect to take place in the character of the normal stool of the newborn during the first week?

238. How often should a newborn baby be allowed to nurse? How would you arrange for the nursing?

239. When there is trouble in getting a baby to nurse what causes are likely to be found? How would you overcome this difficulty?

240. What symptoms would lead you to suspect colic was present, and how would you try to relieve it?

241. What is the temperature, pulse, and respiration of the newborn infant? How would you determine regarding these symptoms?

242. What is the caput succedaneum; how would you treat it?

243. What points regarding the baby should be recorded each day?

244. Write a short paper describing the special care you would give a premature baby in winter. What special dangers need to be guarded against in such cases?

CHAPTER XVII

245. What do you mean by morning sickness? In a mild case what palliative measures would you use?

246. What general symptoms would lead you to regard vomiting in pregnancy as serious?

247. Describe your general methods in caring for such a case.

248. What is meant by abortion? What is therapeutic abortion and what preparations would you make for it?

249. In what month of pregnancy is abortion most likely to occur?

250. Name some of the common causes of abortion.

251. What are the chief dangers of an abortion?

252. What symptoms would lead you to suspect that an abortion was threatened, and how would you try to prevent it?

253. How would you arrest hemorrhage after an abortion? Name some points you would consider it important to observe in such cases.

254. What is placenta previa? What symptoms would lead you to suspect such a condition?

255. What general symptoms would you expect albuminuria to produce during pregnancy?

256. When there is swelling of the feet and legs what causes would you suspect? How would you try to relieve or prevent it?

257. If a pregnant woman is subject to fainting what general advice would you give her with a view to its prevention?

258. What is asphyxia?

259. How would you deal with it in the newborn?

260. Give the common cause of post-partum hemorrhage. How would you try to prevent it? How deal with it when it occurs?

261. Show why prolapse of the cord is dangerous, and tell how you would act in such an emergency until a physician arrived.

CHAPTER XVIII

262. What is uterine inertia and how would you deal with it?

263. Show how auto-infection may take place during the puerperium.

264. Through what channels is infection in a puerperal case

most likely to enter the system? What preventive measures would you use?

265. What symptoms would lead you to suspect that infection had occurred?

266. Describe the general nursing of a case of puerperal sepsis, including prophylactic measures.

267. Show why important in such cases and tell how it sho

268. What caus symptomatic fever in a puerperal woman?

269. Define the alba dolens. Tell how it may be caused, a important nursing points in such cases.

270. What measur y used to relieve engorgement of the breasts?

271. Describe how the breasts should be massaged in such cases.

272. Give the predisposing and immediate causes of mastitis, the symptoms, and the general methods of dealing with it.

273. Show why careful inspection and general care of the nipples is important.

274. How would you deal with a case of fissured nipple?

275. If the supply of milk is deficient what general measures would you use to increase the secretions?

276. What methods are commonly used to dry up the milk?

CHAPTER XIX

277. What is gynecology?

278. What organs and structures are chiefly concerned in this branch of medical science?

279. Define menstruation; puberty.

280. Outline a hygienic mode of life for a girl during the period of puberty.

281. Where does the menstrual flow come from and of what does it consist?

282. What changes take place in the uterus about menstruation?

283. What causes may lead to amenorrhea? State some simple remedies that may be used with a view to its correction.

284. What is vicarious menstruation?

285. Define menorrhagia; metrorrhagia; and mention some of the most frequent causes.

286. Explain the term dysmenorrhea and give some simple measures used to relieve it.

287. What is the menopause? At what age does it occur? What constitutional disturbances may be expected about that time?

288. What symptoms would you regard as danger signals in that period?

289. What is cystitis? Mention some conditions following child-birth or a hysterectomy which might predispose to the development of cystitis. Outline preventive measures.

290. Give the four most prominent symptoms that occur in cancer of the uterus.

291. What advice would you give a woman who had those symptoms?

292. What is gonorrhea and how is it caused?

293. Through what channels may such germs enter the system? What symptoms would you expect them to produce?

294. What is the usual method of managing gonorrhea in a female, and mention some nursing points of importance in such cases?

295. What is chancroid? How is it caused?

296. Write a short paper on syphilis, telling what it is, how caused, stages, when and how communicable, methods of prevention, drugs commonly used in that disease.

297. How may chancre of the face be caused?

298. What are buboes and how may they be caused? What parts of the body are chiefly affected in such cases?

CHAPTER XX

299. Name the usual methods of examination in gynecologic affections.

300. What preparations would you make for such examinations?

301. Name seven positions used in gynecology.

302. Tell how you would place the patient in each position.

303. What is a douche? For what purposes are vaginal douches given?

304. At what temperature would you have the fluid in a vaginal douche for cleansing; to arrest hemorrhage; to relieve pain?

305. Show why the quantity of fluid used in such a douche is important; what quantity should ordinarily be used.

306. What is the best position for giving such a douche?

307. How much of a flow is desirable in ordinary conditions?

308. What precautions would you recommend to be used in giving douches? Give reasons.

309. What is a vesical douche, and how should it be given?

310. In making local applications to the cervix and vagina what instruments and appliances will ordinarily be needed?

311. What is an applicator? How would you prepare it for use?

312. What are tampons and pessaries?

313. How would you prepare them for use? How would you remove them?

314. What are plastic operations?

315. Name two plastic operations in gynecology.

316. Define perineorrhaphy; anterior colporrhaphy; trachelorrhaphy.

317. What is a cystocele?

318. What instruments are likely to be needed in an operation for lacerated cervix and perineum?

319. Describe the special nursing points that should be observed in the after-care of such cases.

320. What is a vaginal section? What are the chief dangers attending such operations?

321. What is a celiotomy? What instruments would ordinarily be used in such an operation?

322. For what purposes is it usually undertaken in gynecology?

323. Outline measures used to alleviate discomfort following a laparotomy.

324. Describe the usual method of dieting in the after-care of such cases.

325. In the nurse's record of such a case what special points should be noted?

326. When may a laparotomy patient be said to be convalescent?

CHAPTER XXI

327. Describe the cry of a baby due to hunger; general discomfort; teething; pain in the chest; and colic.

328. How would you assist in the examination of a child for throat troubles; how arrange for an ear examination?

329. What causes may lead to constipation in a breast-fed infant; in a bottle-fed baby? Mention some common causes of constipation in older children.

330. What simple measures would you suggest to relieve a case of occasional constipation?

331. Describe a normal stool in an infant a month old.

332. What diet would you recommend in case of diarrhea in a child of four?

333. What is thrush? How may it be caused, prevented, cured?

334. Write a short paper on summer diarrhea in infants, giving causes, preventive and curative measures.

335. What methods would you use if ordered to irrigate a child's bowels? How would you wash out a child's stomach?

336. Outline a diet for a child of two years who is convalescing after summer diarrhea.

337. Define marasmus. What symptoms would lead you to suspect it? How are such cases usually treated?

338. State the general conditions present in a case of rickets and the common causes.

339. Outline a hygienic régime for a child of four who has rickets. What serious results would you fear from such a disease?

CHAPTER XXII

340. Describe the stomach of the newborn infant.

341. In what part of the digestive tract does digestion chiefly take place during the first six months?

342. Give reasons why starchy food should not be given to a

young baby, and state at what age you would think it safe to add starch to its food.

343. How would you determine whether or not a baby was thriving?

344. When the mother's milk is defective in quality how is the fact likely to be indicated? How when quantity is deficient?

345. Give four [illegible] g breast milk.

346. State conc[illegible] ou would consider weaning the baby before t[illegible] stifiable.

347. What gen[illegible] you recommend to be observed in all cases [illegible] g of infants?

348. Write a fo[illegible] ing milk which you would advise to be used [illegible] you had to prescribe for a baby three months [illegible]

349. Give the general rules that should govern the predigestion of milk in such cases.

350. How may bacteria in milk be prevented from doing harm? What is certified milk?

351. What common objections are urged against patent foods for infants?

352. When forced feeding of a child is necessary how would you manage it?

353. What is opthalmia neonatorum? How is it caused? What are the early symptoms? What are the results likely to be if not arrested?

354. Give preventive and curative treatment usually used. What would you do to prevent spread of infection in such cases?

355. Define atelectasis. Give its most frequent cause. In what kind of cases is it most likely to occur, and what would you do to prevent it?

CHAPTER XXIII

356. What is dentition? How many temporary teeth should a child have? Classify the permanent teeth.

357. At what age should the first teeth be expected to appear? When should teething be completed?

358. Write a short paper on diseases of the teeth showing how such diseases affect general health.

359. When convulsions in children occur what causes would you suspect and what would you do?

360. What are adenoids? Give symptoms that would indicate their presence. State the advice you would give if consulted regarding such conditions.

361. Mention some precautions which you think should be observed in the care of a child who has had an operation for removal of adenoids.

362. Define enuresis. What suggestions would you give regarding its correction?

363. How would you assist at an operation for circumcision? Why is it sometimes necessary?

364. Mention some special symptoms which you would regard as danger signals in children.

365. Write a short paper on the management of convalescent children. What occupation would you recommend in a case of a boy of eleven with a fractured tibia; a girl of eight after scarlet fever; a boy of fourteen years after typhoid fever?

SECTION III

CHAPTER XXIV

366. Define surgery. Give the main principles on which aseptic surgery is based.

367. How may clean wounds become infected?

368. What measures are commonly used for preventing wound infection?

369. Describe two methods of hand disinfection.

370. How is the field of operation prepared?

371. What are dressings used for?

372. Define ligature; suture; cagut. Why is catgut chromicized? From what sources are silkworm gut, kangaroo tendon, and horsehair procured? How prepared for use?

373. For what purpose is drainage in wounds used? What is a Mikulicz drain; a capillary drain?

374. Outline the duties for which the chief operating nurse is responsible; the senior and junior surgical nurse's duties.

375. How is gutta-percha tissue prepared for use?

376. How should a patient be prepared for an anesthetic? If called to give an anesthetic in an emergency, what physical signs would you regard as important to be observed during its administration?

377. Tell how y[illegible] rubber gloves for use; how care for after use.

378. What sugg[illegible] make to a nurse who expected to hand ins[illegible] operation?

379. Mention so[illegible] urgical technic which you would especially cau[illegible] observe on going on duty in the operating-room.

380. Mention some [illegible] predispose to vomiting after anesthesia. Give measures commonly used for prevention and relief.

CHAPTER XXV

381. Define a wound and mention five classes of wounds.

382. Differentiate incised wounds; punctured, contused, and lacerated wounds.

383. Tell what you know about repair of aseptic wounds.

384. What is meant by healing by granulation? In what classes of wounds does it occur?

385. Explain the term "reparative congestion."

386. What is the difference between an infection and an intoxication?

387. What is hyperemia? Describe the conditions present in the first stage of congestion.

388. What is infective inflammation?

389. Define exudation; adhesion, phagocytes; slough; sequestrum; ulceration; resolution.

390. How may inflammation terminate?

391. What measures are commonly used to arrest inflammation?

392. State several conditions which may lead to a postoperative rise of temperature.

393. What is sapremia? Give causes and symptoms.

394. Define septicemia. Give symptoms and mention some nursing points you would consider especially important in this disease.

395. Explain the term "pyemia," and mention some characteristic features of this disease.

396. In what classes of cases is erysipelas most likely to occur, and what causes it?

397. How are such cases usually managed?

398. What is tetanus? State the causes and mention some nursing points you would regard as important in such cases.

CHAPTER XXVI

399. Define fracture. Mention some predisposing causes. Classify fractures.

400. Explain the conditions present in each variety.

401. Give three rules that should be observed in rendering first aid in fracture cases.

402. Describe the general nursing care you would give a case of fracture of the femur, beginning at the time of the accident.

403. What is an extension apparatus? How is it applied?

404. Give three points which need specially to be noted in using an extension apparatus.

405. Describe the general nursing treatment in a case of fractured spine.

406. What are dislocations? Name three causes that may produce them. How would you care for such cases?

407. Explain what is meant by concussion of the brain. What symptoms would you expect in the first stage, and later?

408. What symptoms would lead you to suspect cerebral compression?

409. Mention some nursing points of special importance in such cases.

410. Name five purposes for which bandages are used.

411. Mention as many rules as you can remember which should be observed in applying a roller bandage.

412. Describe a triangular bandage and two methods of using it.

CHAPTER XXVII

413. Explain the term "orthopedic."

414. Mention some early symptoms which would lead you to suspect the existence of some orthopedic disease.

415. What is "flat-foot" and how may it be caused? Give symptoms.

416. What mea y used to prevent and cure flat-foot?

417. In what is hip-joint disease most likely to occur?

418. Mention s toms present in the early stages of that dise t deformities are likely to result.

419. Give some uses of deformity.

420. Outline a hygienic regime for a child with hip-joint disease.

421. What is Pott's disease? What kind of deformity does it produce? How may it be corrected or prevented?

422. Mention some causes that lead to lateral curvature of the spine.

423. Give some nursing points you would consider important in such cases.

424. What preparation would you make for the application of a plaster jacket?

425. How should plaster-of-Paris bandages be made?

426. What conditions may influence the setting of a plaster cast? What effect does the temperature of the water have in such cases?

427. If assisting a surgeon in applying a plaster cast how would you manage your part of the work?

428. In caring for a case after application of a plaster cast for a fractured leg mention some points you would think especially important to be observed.

CHAPTER XXVIII

429. Give a short description of the eye. What conditions are necessary for perfect vision?

430. Define mydriatics; myotics, giving examples of each.

431. What symptoms would you expect eye-strain to produce?

432. Define astigmatism. How may it be corrected?

433. Define iritis; glaucoma; strabismus.

434. What causes may result in granular lids?

435. What is trachoma?

436. How is it usually treated?

437. Name some common remedial measures that may relieve in a case of simple conjunctivitis.

438. What precautions would you especially observe in nursing a case of purulent conjunctivitis?

439. Describe a method of everting the eyelids.

440. Mention some nursing points you would consider especially important to observe in a case of cataract after operation.

CHAPTER XXIX

441. Define pharynx; glottis; larynx.

442. What and where is the Eustachian tube?

443. Mention some of the most frequent causes of disease of the upper air passages.

444. What is otitis media and how is it usually managed?

445. For what purposes are ear-douches used?

446. State some rules that should be observed in administering such douches?

447. How would you instruct a patient to use a gargle?

448. How should a nasal douche be given? Describe how nasal feeding is done. Mention some points in such treatment which you would be especially careful about.

449. How would you prepare a patient for a mastoid operation?

450. What care would you give a child before and after an operation for cleft palate?

451. Mention some simple treatments for inflammation of the throat and tonsillitis.

452. Explain the terms intubation and tracheotomy.

453. How would you assist a doctor during intubation?

454. Give some special instructions regarding the after-care of such patients.

455. Describe the tube used in tracheotomy.

456. What care should be given such a tube after insertion?

CHAPTER XXX

457. Define lesion stule.

458. What is an fistula; a fissure?

459. What are th ives?

460. How would relieve and prevent this ailment?

461. Name ten dr es cause a rash.

462. How are fur How are they usually treated?

463. What measures would you use to prevent chafing?

464. Mention some applications useful in cases of poison-ivy rash.

465. Name some causes that are believed to lead to eczema.

466. How would you make and apply a starch poultice to remove eczema crusts on the head?

467. Mention some foods that should be avoided by those who are subject to eczema.

468. What foods are usually permitted in such diseases?

469. What is scabies? Give symptoms.

470. How is it usually treated?

471. Define favus; acne.

472. What are lupus vulgaris; sarcoma; carcinoma; cysts; epithelioma?

CHAPTER XXXI

473. Classify burns and scalds.

474. Tell what first-aid treatment you would give in such cases.

475. How would you distinguish between venous and arterial blood in case of hemorrhage?

476. Mention three ways by which hemorrhage may be arrested.

477. What would you do in a case of severe hemorrhage from the nose?

478. Describe the usual treatment in case of hemorrhage of the lungs.

479. How would you manage a case of shock in an emergency?

480. What is the usual method of procedure in a case of sunstroke?

481. How should first aid in case of drowning be given?

482. What general measures are used in case of poisoning?

483. Mention some household emetics and tell how they should be given.

484. What symptoms indicate food-poisoning?

485. How are such cases usually managed?

SECTION IV

CHAPTER XXXII

486. Explain the terms physical therapeutics; psychotherapy; mechanotherapy; hydrotherapy.

487. What are the principal remedial properties of water?

488. Describe the technic of lavage of the stomach.

489. What is enteroclysis? How is it given? What general effects would you expect from a saline injection into the bowel?

490. Describe the slow method of colonic irrigation, mentioning the essential points in its administration.

491. What conditions modify the effects in external applications of water?

492. At what temperature may a bath be said to be cold; cool; temperate; tepid; warm, and hot?

493. How may stimulating and sedative effects be produced by water used externally?

494. What is evaporation? Show how it is useful as a remedial agent.

495. What is the value of friction in connection with hydrotherapy?

496. How are the effects of a cold bath produced?

497. How do hot baths produce effects?

498. What is a Scotch douche?

499. Describe an immersion bath; a spray bath.

CHAPTER XXXIII

500. What physiologic effects would you expect from a Brand bath? How should it be given?

501. How wou et sheet pack; a hot pack?

502. How should be given?

503. What is a ive general rules regarding its administration.

504. For what p aths; sun-baths; electric-light baths given?

505. What preca observe in giving hot-air treatments?

506. What effects would you exp t them to have?

507. What does the Finsen light treatment consist of?

508. For what purposes is it chiefly used?

509. What general beneficial effect would you expect from the use of outdoor treatment in combination with other remedies?

510. Give some simple rules for breathing exercises which you would recommend to increase chest expansion.

CHAPTER XXXIV

511. Define massage. How is it performed?

512. For what purposes is massage chiefly used?

513. Mention some conditions in which massage should not be used.

514. Name some diseases in which massage is an important part of the treatment.

515. Describe the different methods of application in massage.

516. Define effleurage; friction; pétrissage; tapotement.

517. Mention five general principles of treatment which should be observed in administering massage treatments.

518. Describe the stroking movement.

519. What effects are produced by light and heavy stroking?

520. How is friction in massage produced?

521. Describe the movements kneading, pinching, and percussion.

522. What do you understand by the term introductory treatment in massage?

523. In giving a general massage how would you begin? Tell how you would manage the treatment.

524. Outline a systematic division of the surface of the body for massage purposes.

525. Why are lubricants used in massage and what lubricants would you recommend?

526. What are passive movements and how are they useful?

527. What effects would you expect resistive movements to produce?

528. Explain the terms rotation; flexion.

529. Mention the various movements that are commonly used for remedial purposes.

CHAPTER XXXV

530. What parts of the body are included in the nervous system?

531. Write a brief description of the brain.

532. What are the functions of the brain; the spinal cord; the nerves?

533. What are sensory nerves?

534. What are the functions of motor nerves?

535. What part of the brain is termed the cortex?

536. Define cerebellum; medulla.

537. What are functional nervous diseases? Name three such diseases.

538. How would you explain the terms nervousness, neurosis?

539. What general causes lead to diseases of the nervous system?

540. What do you mean by motor symptoms? Give illustrations.

541. What may cause paralysis?

542. Explain the terms hemiplegia; paraplegia; aphasia.

543. What are sensory symptoms? Give illustrations.

544. V t is meant by "reflex symptoms?"

545. D ne hysteria. Mention some symptoms which may be produced by hysteria.

546. Show how suggestion may produce symptoms of disease.

547. Show how suggestion may be used to cure functional diseases.

548. Mention oints in the successful treatment of nerv

549. Outline a or an individual who is threatened with a wn, and who cannot stop work.

XVI

550. Define neu

551. Mention so ca asthenia.

552. Describe some symptoms which are characteristic of neurasthenic patients in general.

553. What is traumatic neurosis.

554. Define hypochondria; psychasthenia.

555. What is neuralgia? Mention some types of this affection.

556. What are the principal remedial methods used in neurasthenia.

557. Write a short paper on the dietetic treatment of such patients.

558. Write a short paper on chorea, giving causes, symptom and general methods of management in a mild case.

559. Define epilepsy; grand mal; petit mal.

560. Mention some diseases which epilepsy may be mistaken for.

561. What is migraine? What nursing measures would you use to relieve it?

562. Explain the term paralysis agitans. In what class of cases is it most likely to occur?

563. What do you understand by the term meningitis? What causes may produce it?

564. State the symptoms you would expect to find in a case of meningitis.

565. How are such cases usually treated?

566. Mention some nursing points of importance to observe in cases of delirium tremens.

567. How is apoplexy caused? What first-aid methods would you use in such a case?

568. In what classes of persons is it most likely to occur?

569. Describe the usual nursing methods in such cases.

570. Define locomotor ataxia. How does it usually affect the patient?

CHAPTER XXXVII

571. Define insanity; psychosis; alienist; psychiatry; delirium. How would you distinguish between sanity and insanity?

572. What functions are ascribed to the mind?

573. State some causes that predispose to insanity?

574. Mention some emergency measures you would use in dealing with the insane.

575. What do you mean by an hallucination? Give an example.

576. Give an illustration of an illusion. What is a delusion?

577. What precautionary measures would you use in dealing with insane paralytics and epileptics?

578. Explain what is meant by "undue elation," giving illustrations.

579. Define melancholia; dementia.

580. Give a brief description of acute mania.

581. Explain the terms senile dementia; paralytic dementia.

582. Mention some other forms of dementia.

583. What symptoms would you expect to find in a case of paresis?

584. Differentiate idiocy and imbecility. What is meant by paranoia? Explain the term exhaustion psychoses.

585. Write a short paper on Mental Hygiene giving your ideas as to how insanity may be prevented.

586. Tell what you know of the causes of insanity.

587. Mention three prominent conditions or symptoms which are commonly found in insane patients.

588. Write a short paper on the observation of symptoms in the insane.

589. Show why observation of the urine and bowel movements becomes very necessary even in chronic cases.

590. Show why sleep-producing drugs should be used with great caution in such cases.

591. Give some rules which you would observe in administering medicines to insane patients.

592. Give reasons why you would consider exercise in the open air important in nursing a case of acute mania.

593. What foods are regarded as of special value in acute cases of insanity?

594. Describe two methods of forced feeding.

595. Give reasons why occupation and entertainment are useful aids to recovery in such cases.

596. Mention some occupations which you would consider suitable for women; for men. Some books which you would recommend.

597. Give some rules for dealing with violent cases.

598. Describe a restraining sheet.

599. On what two things does the recovery of patients suffering from acute mental disorders mainly depend?

600. Write a short paper outlining some nursing suggestions which you would urge nurses in general to adopt in dealing with the insane.

APPENDIX I

HOSPITAL AND INVALID DIETARIES

THE PRESBYTERIAN HOSPITAL, IN THE CITY OF NEW YORK, PATIENTS' DIETARY

House Diet

Breakfast: Tea or coffee (milk and sugar). Bread and butter—White bread, graham bread, corn bread, rolls or toast. Porridge—Oatmeal, wheaten-grits, Indian meal, hominy, or farina. Meats—Hash, eggs, salt fish, fresh fish or stew.

Dinner: Soup—Stock or mutton broth with barley or vegetable or chowder. Dry Bread. Meats—Beef (roast or boiled, mutton (roast or boiled), corned beef, fresh fish, or Irish stew.

Vegetables—Potatoes (baked, boiled, or mashed), tomatoes, baked beans, French beans, turnips, beets, rice, macaroni, or hominy. Pudding—Rice, bread, tapioca, farina, corn starch, or custard.

Supper: Tea (milk and sugar). Bread and butter or toast and butter. Fruit—Apples (stewed or baked), prunes, or pears.

Convalescent Diet

Breakfast: Tea or coffee (milk and sugar). Bread and butter—White, graham, corn, rolls, or toast. Porridge—Hominy or farina. Meats—Eggs, fresh fish, or stew (plain).

Dinner: Soup—Stock or chicken or mutton broth with barley or vegetable. Dry bread. Meats—Beef (roast or boiled), chicken, or fish (fresh). Vegetables—Potatoes (baked, boiled, or mashed), rice, macaroni, or hominy. Pudding—Rice, bread, tapioca, farina, corn starch, or custard.

Supper: Tea (milk and sugar). Bread and milk, milk toast, bread and butter, or toast and butter. Fruit—Apples (stewed or baked), prunes, or pears.

Nitrogenous Diet

Breakfast: Tea or coffee (milk). Bread and butter—Graham bread. Meats—Eggs or fresh fish or stew *without* vegetables or meat hash *without* potatoes.

Dinner: Soup—Stock or chowder. Graham bread. Meats—Beef (roast or boiled), mutton (roast or boiled), fresh fish, or Irish stew. Vegetables—Spinach, lettuce, celery, or string beans. Pudding—Custard.

Supper: Tea (milk). Graham bread and butter or bread and milk. Eggs or cold meat.

Farinaceous Diet

Breakfast: Tea or coffee (milk and sugar). Bread and butter—White bread, graham bread, corn bread, rolls, or toast. Porridge—Hominy, farina, or Indian meal.

Dinner: Soup—Vegetable, macaroni, or barley broth. Dry bread. Vegetables—Baked potatoes, tomatoes, French beans, rice, macaroni, or hominy. Pudding—Rice, bread, tapioca, farina, or corn starch.

Supper: Tea (milk or sugar). Bread and milk, milk toast, hominy, boiled rice, or farina. Fruit—Apples (stewed or baked), prunes, or pears.

Milk Diet

Breakfast: One quart of milk.
Dinner: One quart of milk.
Supper: One quart of milk.

Fluid Diet

Milk, beef tea, chicken broth, mutton broth, egg albumen.

Soft Diet

Cereals, eggs, milk toast, custard, farinaceous puddings, tea, coffee, milk.

Diabetic Diet

Buttermilk, koumyss, beef tea, coffee, cocoa, tea, saccharine in lieu of sugar, clams (thin soup), fish, poultry, beef, mutton, bacon, eggs, string beans, cabbage, tomatoes, lettuce, spinach, greens, lemons, apples, oranges, strawberries. *No milk or sugar.*

Typhoid Fluid Diet

Milk, broth, egg albumen.

Typhoid Delicacies

Rice (well cooked), junket, custard, gruels, milk toast, scraped beef, eggs.

Typhoid Extra Diet

Broths, beef soups, oysters, white fish, beef, chops, mutton, steak, custard, eggs, chicken, rice, white bread, toast, farinaceous puddings. *No vegetables, fruit, pastry, or hot bread.*

After Two Weeks of Normal Temperature

Strained vegetable soups, baked apples, baked potatoes, oatmeal.

EXTRAS (*ordered only by the attending physician or surgeon*): Mutton chops, beef-steak, scraped beef, beef tea (made with hydrochloric acid), chicken (broiled, fricasseed, or roast), chicken broth, eggs, milk, oysters, clam broth, gruels, crackers, ginger bread, custard, milk toast.

The fresh fruit and vegetables above specified will be furnished only "in season."

The above dietary will not be altered in any respect, and nothing whatever will be issued from the kitchen without an order from the superintendent.

THE WORCESTER CITY HOSPITAL, PATIENTS' DIETS

House Diet

Breakfast: Coffee (milk and sugar), bread and butter, rolls, or toast. Cereals—Oatmeal, cream-of-wheat, grape nuts, or force. Meats—Hash, eggs, salt fish, minced meat, or warmed-over cold meat.

Dinner: Bread and butter. Meats—Beef (roast or boiled), or mutton (roast or boiled), or corned beef, or fresh fish or Irish stew. Vegetables—Potatoes and tomatoes, baked beans, turnips, beets, lettuce, rice, or macaroni. Pudding—Rice, bread, tapioca, farina, corn starch, or custard.

Supper: Tea (sugar and milk). Bread and butter. Fruit—Apples (stewed or baked), prunes, or pears.

Nitrogenous Diet

Breakfast: Tea or coffee (milk). Bread and butter or graham bread. Meats—Eggs, fresh fish, stew *without* vegetables, m [illegible] potatoes.

Dinner: Soup—S [illegible] graham bread. Meats—Beef (roast o [illegible] (roast or boiled), fresh fish, or Iris [illegible] —Spinach, lettuce, celery, or strin [illegible] —Custard.

Supper: Tea (m [illegible] ad and butter, bread and milk, egg [illegible]

[illegible] Diet

Breakfast: Tea or coffee (m [illegible] sugar). Bread and butter, corn bread, rolls, toast and hominy, farina, or Indian meal.

Dinner: Soup (vegetable). Bread. Baked potatoes and tomatoes, French beans, rice, or macaroni. Pudding—Rice, bread, tapioca, or corn starch.

Supper: Tea (milk and sugar). Bread and milk, milk toast, hominy, boiled rice, or farina. Fruit—Apples (stewed or baked), prunes, or pears.

Obstetric Diet

First Day after Confinement: Milk, gruel, cocoa, or broth, 4 oz. every two hours.

Second Day:

Breakfast: Cereal and cocoa, 6 oz.
10 A.M.: Milk or gruel, 6 oz.
Dinner: Soup or broth, with toast, rice, or corn starch.
3 P.M.: Milk or gruel, 6 oz.
Supper: Milk toast, tea, or cocoa.
8 P.M.: Milk or gruel, 6 oz.
Milk, cocoa through night p. r. n.

Third Day:

Breakfast: Cereal, cocoa, toast.
10 A.M.: Milk or gruel, 6 oz.
Dinner: Steak and baked potatoes, corn starch, rice, or some milk pudding. Bread and butter. Milk and cocoa.

3 P.M.: Milk, broth, or gruel, 6 oz.
Supper: Milk toast, custard, or baked apple.
8 P.M.: Milk or gruel.
Liquid nourishment through night.

Fourth Day:
Breakfast: Dropped egg, cereal, cocoa, tea, or milk.
10 A.M.: Milk, 6 oz.
Dinner: Steak, chop, chicken, potato, milk pudding, bread and butter, tea, cocoa, or milk.
3 P.M. Milk or gruel, 6 oz.
Supper: Bread and butter, sauce, baked apple, or custard.
8 P.M.: Milk or gruel, 6 oz.
Liquid nourishment through night.

Fifth Day:
Breakfast: Oyster stew, dropped egg, cocoa, tea, or milk, cereal, bread, or toast.
10 A.M.: Milk, 6 oz.
Dinner: Roast or boiled meat, potato, bread and butter, dessert.
3 P.M.: Liquid nourishment, 6 oz.
Supper: Bread or toast, sauce or custard.
8 P.M.: Liquid nourishment, 6 oz.

The succeeding days' diet remain about the same in character unless there is a special written order to the contrary.

Liquid Diet

Milk (2 pints), broth, gruel, beef tea (kind and quantity as ordered by the attending physician or surgeon), beef juice, koumyss, oyster broth, mutton broth, chicken broth, bouillon, barley-water, oatmeal gruel, malted milk.

Usually 4 pints of liquid nourishment is allowed for each patient, so that 6 oz. every two hours may be given.

Milk Diet

Breakfast: One pint of milk.
Dinner: One pint of milk.
Supper: One pint of milk.

Semisolid Diet

Breakfast: Cocoa, coffee, or tea, cereal with milk toast.
Dinner: Soup with toast, any milk pudding.
Supper: Tea or coffee, cream toast, custard, or junket.

Amounts r twenty-four hours: Milk, 2 pints; sugar, 2 oz.; soup, 1 pint; cocoa, 1 pint.

Patients on this diet should have milk, or some liquid nourishment, at 10, 3, and 8 o'clock and during night.

Special Diets

(ordered by attending physician or surgeon):

Breakfast: Oysters v), cream of wheat, shredded
wheat, dropped), eggs (scrambled),
eggs (, toast (milk), cocoa, milk
(pints

Dinner: Beef-ste , chicken, mashed potato,
baked k) with croutons, oysters
(raw), c pped eggs, scrambled eggs,
toast (d boiled rice, corn starch,
blancma ca pudding, cocoa.

Supper: Milk toast, or ed apples, corn starch, custard, sauce, jelly coffee, jelly wine, jelly lemon, jelly orange, junket, farina, blancmange, cocoa, shredded wheat.

No order from above list to be continued longer than two days unless renewed.

The nurse may order for each patient, for breakfast, 1 cereal, 1 egg or oysters, 1 slice of toast and cocoa.

For dinner one kind of meat, with potato or dropped egg, or soup, with one kind of dessert.

Supper: Toast or cereal, with sauce or custard. Tea or cocoa may be ordered with each meal. Nurses should order jellies only for very sick and fastidious patients.

In addition to above list, patients on special diet may have: Milk, 2 pints; bread, ½ loaf; butter, 1 oz.; sugar, 2 oz.; tea or coffee, 1 pint for breakfast and supper..

Fresh fruit and vegetables furnished in season and ice-cream once a week during summer months.

The above table will be altered in any respect without instructions from the superintendent.

SOME SPECIAL DIETS, MASSACHUSETTS GENERAL HOSPITAL

House Diet with Care

No coarse vegetables. No brown bread or beans. No salt fish or hash.

Give—Strained soups. Oatmeal, strained.

Extra Diet with Care

Chicken, eggs, toast, stale bread, blancmange, scraped-beef sandwiches, all soft custards (without raisins), raw oysters, crackers, ice-cream, jelly, milk, broths, gruels, soups, whey, slip, oranges, weak tea and coffee, cocoa.

Special Dry, Salt-free Diet

Morning: Salt-free bread, two slices (toasted, if desired). Plenty of salt-free butter, maple syrup, if desired. Two soft-boiled eggs without salt.
10 *A.M.:* Rice, with a little cream and sugar or syrup.
Noon: Mashed potato, with butter. No salt. Salt-free bread, two slices. Salt-free butter (plenty).
4 *P.M.:* Rice, tapioca, or custard (hard).
Night: Salt-free bread, two slices. Salt-free butter (plenty). Soft-boiled eggs, two.

One orange a day. Limit liquids to 1 pint a day, including milk and water.

Hyperchlorhydria (Hewes)

Olive oil, oz. ss-j at 7.30 A.M.

Breakfast: Toast. Milk. Low proteid cereal—rice, wheat.
Lunch, 10 *A.M.:* Crackers, with or without milk.
Dinner: Meat, potato, rice, macaroni, squash, etc. Custard, tapioca, sago, ice-cream.
Lunch, 3 *P.M.:* Crackers.
Supper: Same as breakfast. Oil again in evening.

Diet for Acute Colitis (Dysentery)

Purge and starve for one day; then lean meat, 10 oz., three times a day. Albumin-water (2 eggs), six to eight times a day. Continue for four days, then add skimmed milk, 1 pint a day. Toast (no butter), 3 slices a day, with maple syrup. Rice, 1 saucer daily. After ten days increase toast, give butter, macaroni, tapioca, cream-cheese, Indian-meal mush.

for Gastric and Duodenal Ulcer (Hewes)

Milk, oz. ij; 1 soda-cracker (powdered), and sugar, oz. j, every two hours. Give for two or three days, then increase to milk, oz. vi–viij, with 4 crackers and sugar, oz. i–ij, every two hours. Eight feedings in twenty-four hours. Continue for two to three weeks, then adopt following:

1. Milk and cra
2. Indian-meal r salt.
3. Potato purée,
4. Milk and whi
5. Soft custard.
6. Chocolate.
7. Pea purée.
8. Milk and crack

Continue for two n

Schn wes)

Morning: 50 gm. zwieback. 1 pint of oatmeal gruel. 40 gm. oatmeal. 10 gm. butter. 200 gm. milk. 300 gm. water. 1 egg.
11 *A.M.:* 1 pint milk.
Noon: 125 gm. chopped beef, broiled and made palatable with 20 gm. butter. 250 gm. mashed potato, using 10 gm. butter. Serve meat on 50 gm. toast.
4 *P.M.:* 1 pint of milk.
Night: Same as morning.

SPECIAL DIET LIST

Yes	No
Bread twenty-four hours old.	Tea, coffee.
Crackers.	Cake, candy.
Milk.	Doughnuts, pie.
Eggs (not fried).	New Bread.
Broiled or roast-beef, mutton, chicken.	Kidneys, liver.
	Beer, wines, and liquors.
Broiled or boiled fish.	Tomatoes, rhubarb.
Potato, very little.	Asparagus.
Peas, spinach, beans.	Sour fruits.
Baked apple, squash.	Pork or salt meat.
Soups, macaroni.	Fried meat.
Oatmeal or cracked wheat.	Cabbage.
Cocoa.	Pickles.

Do not eat meat or soup more than once daily. Drink plenty of water. Eat slowly and chew carefully.

DIET LIST

Yes	No
Bread twenty-four hours old.	Tea, coffee.
Crackers.	Cake, candy.
Milk.	Doughnuts, pie.
Eggs (not fried).	Beans, new bread.
Broiled or roast-beef, mutton, chicken.	Pork, or salt meat.
	Fried meat.
Broiled or boiled fish.	Salt Fish.
Potato, very little.	Cabbage.
Peas, spinach.	Pickles.
Baked apple.	
Soups.	
Oatmeal or cracked wheat.	
Cocoa.	

TYPHOID FEVER DIETS

Massachusetts General Hospital

Dr. Shattuck's Enteric Diet:

Milk.
Mellin's Food.
Ice cream.
Milk whey.
Slip.
Finely minced chicken.
Eggs, soft boiled or raw.
Milk-toast without crust.
Macaroni.
Blanc-mange.
Broths.

Special Enteric Diet:

Steak; chop; white meat of chicken in small amounts.
Toast; bread; cereals.
Eggs in any form.
Mashed potato.
Tomatoes, strained.

Oyst

Stewed fruits.

Crackers.

Patients must be told to chew all food well.

Liquids and Soft-solid Diet (*Hewes*). *Weak stomach. Weak heart. Typhoid.*

Breakfast: Inc th cream and sugar, or with salt only (h

10–11 A. M.: Cra egg-nog.

Dinner: Pea pu ft or cream toast, and soft-boiled egg.

3–4 P. M.: Custa

Night: Rice; mil

Seco

Breakfast: Wheat germs; milk.

10–11 A. M.: Crackers and milk.

Noon: Finely-cut chicken; wine jelly.

3–4 P. M.: Chocolate or crackers and milk.

Night: Cream toast; apple sauce.

Third Day

Breakfast: Wheat flakes; milk.

10–11 A. M.: Crackers and milk.

Dinner: Two soft-boiled eggs; rice (custard or corn starch at 3–4 P. M.).

Night: Potato purée; toast.

Alternate diets.

Massachusetts General Hospital Dietaries

Diet for Acute Nephritis. No. I

Uric Acid Gravel

Four Days.—Milk, 800 cc.; cream, 300 cc.; bread, 200 gm.; butter. Feed 6 times a day with mixture milk, 150 gm.; cream, 1 oz.; bread, ½ slice.

Fifth Day.—Adopt following: Milk, 800 cc.; cream, 300 cc.;

rice, 50 gm.; tapioca, 50 gm.; bread, 100 gm. Occasionally ice cream, custard. Vary diet from day to day in above limits.

If edema present and fails to go, change above diet to Dry Salt Free Diet.

At start give no more liquids than above; after edema gone can give water as desired.

No. II

Special Nephritic Diet

(Not for very acute stages)

(See Diet I)

Breakfast: Toast, with salt and butter; milk, 4 oz.; 1 soft-boiled egg, with salt.

Noon: Toast and butter; 1 soft-boiled egg; 50 gm. rice, with milk and sugar, or custard.

Night: Tapioca or rice; toast; apple sauce; milk. Limit liquids to 1000 cc.

Diet for Oxaluria

Avoid spinach, rhubarb, figs, cocoa and chocolate, tea and coffee, potatoes, green beans, plums, tomatoes, berries.

Cut carbohydrates low.

This diet:

1. Eggs; toast; milk.
2. Meat or fish; green vegetables except those forbidden; peas; onions; custard; fruit; ice cream.
3. Cereals; cold meat; cooked fruit (except forbidden form).

Diabetic Diet. (*Strict—Sugar free*)

Contains about 20 *gm. of carbohydrate; calories,* 2800; *proteid,* 110 *gm.*

Breakfast: Bacon, 100 gm.; eggs, no. ii.; orange, no. i.; coffee, with saccharin and cream.

11 A. M.: Cheese, cream or Swiss, 50 gm.

Noon: Beef, veal, lamb, or chicken, 100 gm.; lettuce or tomato salad, with oil; spinach, onions, or cabbage, cauliflower, olives; custard made of eggs and cream, with saccharin or ice cream made the same way.

4 P. M.: Soft-boiled eggs, with butter.

Night: Fish, 100 gm.; cucumber salad, asparagus, or beet tops; mushrooms; almonds. Give all cream and butter possible. Vary diet daily within above limits.

At start give above diet, with addition of 200 gm. bread. After two to four days cut bread gradually 100 gm.; 50 gm. to strict diet. If acidosis increases with strict diet give large doses of soda. Control in this way and change of diet as long as possible.

If patient has increasing acidosis on strict diet and soda, 8 oz. a day, try method of starvation one day, vegetable diet (no carbohydrate) one day, oatmeal, 250 gm., one day, alternating. Same plan may be tried if failure to get sugar free on strict diet, but first try plan of cutting down proteid on strict diet, replacing with more cream and butter, as sugar is made from proteid.

Keep on strict diet one month after using sugar free, then add bread, 25 gm., etc.

Diet for Diabetics

1. FOODS ALLOWED

Eggs, fish, fowl, and meat of all kinds, except liver; butter, olive oil, and fats of all kinds; cheese; nuts of all kinds, except chestnuts; olives, cucumbers, mushrooms, young onions, string beans, watercress, asparagus tips, tomatoes, pickles, sauer kraut, sea-kale, dandelions, turnip tops, spinach, lettuce, cabbage, cauliflower, Brussels sprouts. (The green-colored parts of vegetables are the most harmless.) Bread made from genuine gluten flour, or almond or soja-bean meal; custard, blanc-mange; milk in moderate quantities; buttermilk, cream, koumiss, tea, coffee, cocoa-shells, plain soda-water, Vichy, Apollinaris. To sweeten tea, coffee, custard, etc., glycerin or saccharin may be used instead of sugar.

2. FOODS FORBIDDEN

White-colored vegetables and those which grow below ground; turnips, beets, parsnips, carrots, radishes, celery, potatoes, wheat, oatmeal, rye, corn, rice, sago, tapioca, squash, peas, beans; fruit of all kinds, except lemons, sour oranges, sour cherries, cranberries, and red currants; bread, "crackers," pastry, macaroni, and vermicelli; sugar and sweetened foods, jam, syrup, molasses; sweet pickels; cocoa, chocholate. Soups must not be "thickened."

REMARKS

Many samples of gluten flour are harmful, as they contain a large amount of starch.

MISCELLANEOUS NOTES ON DIETS—INFANT FEEDING

Peptonized Milk.—Add to 4 tablespoonfuls of cool water a peptonizing tablet or one-half the contents of a peptonizing tube; stir until dissolved; add to ½ pint of cool milk, and put the vessel containing this into hot water of a temperature of 115°F.; let it remain here for thirty minutes, or for a shorter time if the slightest bitter taste develops. Then put on ice, or, better, heat quickly to boiling.

Sterilized Peptonized Milk Mixture.[1]—Dissolve the half of a tube's contents or 1 tablet in 8 ounces of water and then add to 8 ounces of milk, and peptonize as before, finishing the process by rapidly raising to the boiling point.

To make the sterilized infant's mixture use:

Cream	1½ ounces;
The peptonized milk mixture	2 ounces;
Water	4½ ounces;
Milk-sugar	1 measure.

Fill the bottles of the sterilizer with the required amount and sterilize. Half an hour in the sterilizer should be sufficient on account of the previous scalding. No "soda solution" need be used, as the mixture is already alkaline.

Peptogenic Milk Powder.[1]—This preparation furnishes a very convenient method of preparing a predigested mixture which approximates the character of human milk, although according to recent analyses, rather too rich in casein. It consists of a mixture of extract of pancreas, soda and other alkalies, [illegible]d milk-sugar, and is so arranged that it may be measured [illegible]ut and mixed with the proper amount of water, milk, and cream, according to printed directions.

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[1] Formulæ from Griffith's "Care of the Baby."

Peptonized Beef-tea.[1]—Mix 8 ounces of finely minced beef, free from fat, with 1 pint of water. Simmer from one to two hours with frequent stirring. Cool down to 110° or 115°F.—that is, temperatur[illegible] to give discomfort to the finger held in it[illegible]nizing tablets. Stir until dissolved. Ke[illegible]rature for an hour or two, with occasiona[illegible] bitter taste. Then boil for a moment, st[illegible]

Peptonized M[illegible]ast in which there is plenty of milk may [illegible] making it into a pulp and then stirring in the [illegible]ts or the contents of the tube. Keep this wa[illegible] twenty minutes, or less if the faintest bitterness develops. Then quickly raise it to boiling to stop further action.

Meigs Gelatin Food[1] is said frequently to agree with sick babies where other foods fail. The gelatin solution is made by soaking a piece of plate gelatin 2 or 3 inches square in cold water for a short time and then dissolving by pouring on it a teacupful of boiling water. This solution is sometimes used as a diluent for food in place of barley-water. The gelatin food is made by adding to this solution while boiling a teaspoonful of arrowroot which has been blended with a little cold water. Milk and cream are added to this in quantities varying with the age and general condition of the child.

Cream-and-whey Mixture.[1]—Another mixture useful in many cases is the cream-and-whey mixture, made as follows:

Cream	1 ounce;
Whey	2 ounces;
Warm water	2 ounces;
Milk-sugar	1 teaspoonful.

Buttermilk.—Where there is difficulty in securing good buttermilk, as is often the case in cities, an excellent form of buttermilk may be made by adding buttermilk tablets (lactone tablets) to sweet milk. These tablets contain the lactic acid germs which cause the acidity in ordinary milk. The process is as follows:

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[1] Formulæ from Griffith's "Care of the Baby."

Take 1 quart of fresh, rich milk, put it in a clean jar of glass or earthenware and add to it ⅓ quart of hot water. The amount of water may be varied according to the richness of the milk and the taste or requirements of the individual who is to be served. Add a pinch of salt and 1 buttermilk tablet, which has been previously powdered. Mix till the tablet is fully dissolved and evenly diffused. Cover the jar and set it aside in a moderately warm place. The ordinary living-room temperature will be high enough. In twenty-four to thirty-six hours the thickening and fermentation will have proceeded far enough. Then set in an ice-box or in the cellar. Before using beat it thoroughly with a spoon or egg-beater. If the temperature is too low the buttermilk will take longer to ferment. It should be tepid when the tablet is added. When the action of the tablet is retarded the remedy is to slightly warm the milk bringing it about to body heat, and then let it stand a few hours longer before beating.

In case of children with intestinal disorder it may be necessary to remove the cream before adding the tablet.

DIET IN DYSPEPSIA

Hutchinson divides all cases of dyspepsia into two main classes: 1. "Those in which there is some organic lesion of the stomach, as ulceration, catarrh, dilatation, or malignant disease. 2. Cases that are purely functional with a nervous basis in which the secretion is disordered.

"The term 'digestible' is practically synonymous with 'easily dissolved.' On this plan food may be divided into four groups:

"1. Beef-tea, eggs lightly cooked or raw, milk, biscuits.

"2. Sweetbread, boiled fowl or pigeon.

"3. Scraped, underdone beef-steak; potato purée, stale bread.

"4. Roast chicken or veal, cold roast beef (underdone), white fish, macaroni, rice, chopped spinach.

"In gastric ulcer the dietetic indications are to avoid mechanic irritation, to neutralize the usually excessive acidity of the gastric juice, and to tax the motor power of the organ as little as possible. Milk meets these indications better than any other food.

"*Dilatation of the Stomach.*—The indications are to avoid overburdening the stomach, to avoid fermentable substances which produce gases and increase the distention of the organ to facilitate the passage of the food into the intestine. The meals should be small, dry, and composed mainly of animal constituents.

"*Chronic Gastritis.*—The chief indication is to avoid foods which may irritate the mucous membrane of the stomach, mechanically or chemically, and excite a secretion of mucus. Among these are the stones and skins of fruit, whole wheat bread or oatmeal, tough meats, condiments, alcohol, sugar, fatty foods. Food should be finely divided, eaten slowly, and but little at a time.

"Acid dyspepsia may be treated by giving farinaceous foods, with a view to exciting the least secretion of acid in the stomach; but a diet rich in animal constituents will give the best results. Milk and meat may be taken freely, including butter and bacon. Sugars and all sweet and sour foods should be avoided.

"*Atonic Dyspepsia.*—Foods that will excite the gastric secretion, such as soups, meat extracts, salts, and other condiments should be used. Meats and all bulky foods should be restricted. In dyspepsia with flatulency, fermentable articles should be forbidden, especially green vegetables, peas, beans, and sweets. Bread should be eaten in the form of dry toast. Meals should be taken dry. Hot water should be taken between meals."

DUBOIS DIET AND ROUTINE HOSPITAL NURSING

TREATMENT FOR NERVE PATIENTS

Rest in bed, with one pillow, for several weeks. Strict isolation from friends, letters, papers, or anything else external. Life moves in prescribed radius until doctor orders change.

Given during entire treatment:

Cold sponge—55° to 60°F.—followed by alcohol rub, and preceded by cleansing bath every morning.

Cold pack every night.

S. S. enema every third day, if necessary.

Prepared lime-juice, 2 drams, in glass of water, or juice of half a lemon or of an orange every morning before any food.

Diet of Dubois (of Berne):

First week, milk only, every two hours, from 7 to 9 P.M., preferably given hot.

First day feedings, 3 ounces; second day, 4½ ounces; third day, 6 ounces; fourth day, 6 ounces, with 9 ounces, three times; fifth and sixth days, the same as fourth day, except at 7 A.M., when 12, instead of 9 ounces are given; and on sixth day, with first milk, give slice of brown bread with honey or marmalade; seventh day, as on the sixth, until 1 P.M., when full meal schedule is taken up and continued.

Eighth day, 7 A.M., milk, 8 ounces; 8:30 A.M., full breakfast, with honey or marmalade; 10 A.M., milk, 8 ounces (often 12 ounces, at all times); 1 P.M., full dinner; 4 P.M., milk, 8 ounces.

TEST MEALS

In various diseases of the digestive organs it becomes necessary to use test meals to ascertain the exact conditions of the stomach contents or of the gastric juice. After a certain time has elapsed the stomach contents are withdrawn by siphonage.

Ewald's test breakfast consists of 1 or 2 white-bread rolls, with a specified allowance of weak tea without sugar or milk.

Riegel and Leube's test dinner consists of specified quantities of beef-soup, beef-steak, white bread, and water.

APPENDIX II

SURGICAL NOTES

PREPARATION OF SURGICAL MATERIALS

Suture.[1]—All suture material used in the hospital is prepared by the chief surgical nurse. Silkworm gut is twisted in rings containing six lengths, each washed with soap and water, rinsed in alcohol, then boiled with the instruments at the time of operation. Horsehair is prepared in the same manner. For use in cases of emergency a supply of each is kept in 90 per cent. alcohol.

Silk and celluloid linen are wound on small glass spools, placed in glass tubes which have been thoroughly cleaned, separated by cotton, then plugged with cotton, and sterilized three days by fractional sterilization, each tube being labelled with the number of silk or linen it contains.

Catgut is prepared by two methods. In preparing dry catgut, the raw material is immersed in ether and allowed to remain for a week or more. It is then cut in strands 18 to 20 inches long, wound around three or four fingers, wrapped in tissue paper, and placed in small envelopes, the size being noted on the outside. These envelopes are then placed in the receivers of the catgut and sterilizer, the steam turned on, and the catgut dried out for one day at a temperature of 120°F. The following morning the steam is turned on slowly till a temperature of 290°F. is reached. This degree of heat is maintained for three hours, care being taken that it does not rise above 295°F. The next day it is sterilized again under the same condition for two hours. In preparing by the iodin method the catgut is cut in strands 28 inches long, each strand being [illegible]d over the fingers into a ring. These rings of catgut are strun[illegible]on string, each number by itself. It is then immersed i[illegible] basin of albolene and allowed to stand twenty-four hours. Next the basin of albolene with the catgut is placed in another basin containing sand to the depth of about an inch. The temperature is raised slowly to 310°F. and held at that point for two hours. It is then stored in a solution of Columbian spirits 100 p[illegible] iodin 1 part. The string is cut and the cat[illegible].

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[1] Harper Hospital Report.

Iodoform ga[illegible] bandage gauze in widths 1, 2, 3, and 4 in[illegible] then sterilized on three days. For 5 yards [illegible] powder 2 ounces; sterile glycerin, 3½ ounces[illegible]; ether, 5 ounces, is used. In preparing it the [illegible]eir hands, put on sterile gowns, and wear r[illegible]en the above mixture is rubbed into the gauze, [illegible]erile sheet, and stored in sterile jars. It is not resterilized.

Balsam-of-Peru Gauze.—Balsam of Peru, 1 part; castor oil, 10 parts; thoroughly mix and sterilize. Pour on sterile gauze dressings as needed.

Boracic Acid Gauze.—Cut gauze into convenient lengths and boil in a saturated solution of boracic acid. When almost cold wring the gauze out, fold, and place in glass receptacles and sterilize by steam.

Permanganate Gauze.—Prepare a solution of permanganate of potassium by dissolving 2½ drams of the drug in 1 quart of hot water. Dip plain sterilized gauze, cut into convenient lengths, into this solution. Wring out, roll, and keep in a dark glass or porcelain container.

Catgut (*Credé Method*).—Raw catgut, just as it is received from the manufacturer, is wound on a glass reel and submerge in a 1 per cent. solution of actol, in which it is left for one week; the glass jar in which it is placed being wrapped with cardboard to keep out the light. After eight days the solution is poured off, the open jar covered with four thicknesses of gauze, and exposed to the light until the strands have turned black; distilled water is then repeatedly poured over the catgut in the jar until the water remains clear. The jar is again covered

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[1] Harper Hospital Report.

with four thicknesses of gauze and stood in a warm place until it is thoroughly dried out; then it is closed with a cover, for it is ready for use, not having been touched with the fingers during the process of preparation. Before using, a reel is placed in a dish containing 60 per cent. alcohol, out of which it is used during operation. Strong alcohol makes it too stiff and less firm.—*Annals of Surgery.*

Argyrol Catgut.—Cut catgut in 18-inch lengths. Slightly soften in sterile water, and wind on glass spools. Place in glass jars containing a 10 per cent. solution of argyrol made with distilled water. Allow it to soak for ten days; shake the jar slightly each day to keep the argyrol more completely in solution. On the tenth day shake the jar gently each hour for several hours before the gut is removed from the solution, and pour off the solution. To free the gut from any superfluous argyrol solution a stream of sterile water is poured over it till the water comes off clear. The gut is then stored in alcohol. This method is recommended by many surgeons for its simplicity. Catgut prepared in this way has been subjected to bacteriological tests and found to be sterile.

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APPENDIX III

MISCELLANEOUS NOTES

Schott Exercises.—The Schott system of "heart gymnastics" differs from the usual Swedish resistive movements in the important sense, when applied to cardiac disease, of being "gently resistive." The exertion on the part of the patient is to be small at first and increased as the series progresses step by step. The exercise is invariably graduated to the patient's strength, and the duration of the séances progressively increased from fifteen to forty minutes, including intermissions.

The success attained by the Schott exercises is largely owing to his strict advice as to details. Even the matter of interest or enthusiasm on the part of the patient is encouraged, for "movements," says Dr. Schott, "without design weaken the heart; movements with design strengthen the heart." The pulse is carefully counted before, during, and after the séance. The operator is not to grasp or otherwise constrict the patient's limbs, but all resistance is made with the hand flatly held.

The following rules are also insisted upon:

1. Each movement is to be performed slowly and evenly, without jerking.
2. Each movement, single or combined, is to be followed by an interval of rest (sitting).
3. No movement is to be repeated twice in succession in the same limb or group of muscles.
4. The patient is to be instructed to breathe naturally and regularly, and not "hold the breath" during any movement.
5. The operator must watch the patient's face for (*a*) irregular breathing, (*b*) pallor of the cheeks or lips, (*c*) straining or trembling, (*d*) dilation of nostrils, (*e*) drawing down corners of the mouth, (*f*) sweating.

6. Should any of these signs appear something is wrong, the resistance is too great or the execution too rapid; in either case the movements must be interrupted and the patient allowed a period of rest.

While in advanced cases the series of movements may be somewhat extended, the following list comprises all the exercises really essential to a complete treatment of the "heart gymnastics," and is the series selected and quoted by Dr. Theodore Schott himself in his "Lectures on the Action of Medicines."

The exercises, apparently very simple, should only be given by well-trained operators and *I caution against the attempts of the inexperienced.*

Exercises to be given in the "standing" position, with the operator resisting.

1. Raise the arms slowly outward from the side until on a level with the shoulder. After a pause slowly lower to position.

2. Incline the body sideways as much as possible toward the right, and then to the left.

3. Extend one leg as far as possible sideways from the body, the patient steadying himself by holding on to a chair. Same with the other leg.

4. Extend arms in front of body to a level with shoulders, and then put down.

5. With hands resting on hips, bend body forward as far as possible, then return to upright position.

6. One leg is raised with the knee straight forward as far as possible, then brought back. Repeat with the other leg.

7. With hands on hips, the body is twisted around as far as possible to the right, and then again to the left.

8. With hands resting on a chair, the back stiff and straight, raise first one leg and then the other as far as possible backward.

9. With fists supinated the arms are extended outward and next inward at the level of the shoulders.

10. Raise each knee as far as possible to the body and then extend leg.

11. With fists pronated extend arms as in exercise 9.

12. Each leg is bent backward from the knees and then straightened.

13. Each forearm is bent and straightened from the elbows.

14. Arms are brought from the sides forward and upward, then downward, and back as far as they will go, the elbows and hand being straight.

15. Arms are put at a level with the shoulders and then bent inward and again extended.

16. With arms in front at level with shoulders and the hands stretched, the arms are opened out sideways and then brought together.

17. Arms are bent from elbow, lifted outward and extended.

The exercises in the lying or sitting position are preferably foot flexion and extension, thigh flexion and extension, and chest lifting.

The physiologic effects of these movements are found to be a well-distributed muscular action resulting in the pumping of the blood toward the surface of the body, thus relieving the heart. In this the exercises produce results similar to those of the bath. That is, they warm the extremities, render the breathing freer and deeper, and the pulse slower and stronger. Sometimes the baths produce the most marked effects, sometimes the exercises. For best results and quickest, both should be employed. As a rule, the exercises are to be given an hour before or not sooner than two hours after the bath.—*Max J. Walter.*

Nauheim Baths.—*Method.*—The bath is given in three grades, the intensity and stimulating effect of which are progressively increased with the increasing proportion of the chemic substances which they contain. The composition of these several grades is as follows for a bath of 40 gallons:

1. Chlorid of sodium, 4 pounds; chlorid of calcium, 8 pounds; sodium bicarbonate, ½ pound; commercial hydrochloric acid (25 per cent.), ¾ pound.

2. Chlorid of sodium, 8 pounds; chlorid of calcium, 12 pounds; sodium bicarbonate, 1 pound; commercial hydrochloric acid, 1½ pounds.

3. Chlorid of sodium, 12 pounds; chlorid of calcium, 20 pounds; sodium bicarbonate, 2 pounds; commercial hydrochloric acid, 3 pounds.—*Kellogg.*

To Prepare 1 Pint of a Solution

Required to contain of a certain substance		Take of the substance the below stated amount with enough water to make 1 pint
Per cent.	Or	Grains
⅟₁₀₀	1:10,000	0.73 (¾)
⅟₅₀	1:5,000	1.46 (1½)
⅟₄₀	1:4,000	1.83 (1¾)
⅟₃₀	1:3,000	2.44 (2½)
⅟₂₅	1:2,500	2.92 (3)
⅟₂₀	1:2,000	3.65 (3¾)
⅟₁₅	1:1,500	4.87 (4¾)
⅒	1:1,000	7.30 (7¼)
⅕	1:500	14.60 (14½)
¼	1:400	18.25 (18¼)
⅓	1:300	24.33 (24¼)
½	1:200	36.50 (36½)
1	1:100	73.00 (73)
1½	1:75	97.33 (97)
2	1:50	146.00 (146)
2½	1:40	182.50 (180)
3	1:33⅓	219.22 (220)
4	1:25	292.00 (290)
5	1:20	365.00 (365)
10	1:10	730.00 (730)
20	1:5	1460.00 (1460)
25	1:4	1825.00 (1825)
50	1:2	3650.00 (3650)

(From *Bellevue Hospital Formulary.*)

Table for Preparing Percentage Solutions.—"One fluidounce of water, or 480 minims, weighs 456.4 grains. 1 pint of water, or 7680 minims, weighs 7302, or practically 7300 grains. Hence, a 10 per cent. solution, for instance, is one which contains 73 grains of some substance in 1 pint.

"The following table will show, at a glance, the quantity of any substance, *by weight*, required to prepare 1 *pint* of a solution of the required percentage. When great accuracy is not required, the rounded-off figures, in parentheses, may be used, and the fractions omitted."

Harrington's Solution

Corrosive sublimate	0.8 parts;
Hydrochloric acid (C. P.)	60 parts;
Alcohol	700 parts;
Water	240 parts.

Thiersch's Solution

Salicylic acid	15 grains;
Boric acid	90 grains;
Sterile water	16 ounces.

Dobell's Solution

Sodium borate, Sodium bicarbonate	aa 2 drams;
Glycerin	3 fluidrams;
Acid carbolic (90 per cent.)	30 minims;
Aqua dest	q. s. ad. 16 fluid ounces.

Lead-and-opium Lotion

Liq. plumb. subacet	2 fluidrams;
Tinct. opii	2 fluidrams;
Liq. calcis	6 ounces.

Plain water is commonly used instead of lime-water.

Hand Lotion, No. 1

Tr. lavandulæ comp	3 fluidrams;
Acidi citrici	10 grains;
Alcoholis, Aquæ	aa 1 ounce;
Glycerin	q. s. ad. to make 4 ounces.

Hand Lotion, No. 2

Alcohol	1 ounce;
Tr. benzoin co	2 drams;
Glycerin	2 ounces;

Juice of 1 lemon, strained.

NUTRIENT ENEMATA

Sugar and Milk Enema

Grape-sugar	2 ounces;
Milk	8 ounces.

tion

Glucose	10 drams;
Water	12 ounces.

ıula

Beat whites of 2 poonful of cold water; add a teaspoonful or two a half-teacupful of a 20 per cent. solution of glu l of claret, and a teaspoonful of peptone solution. ature below the coagulation point of the albumin. ne entire amount should be about 8 ounces.

Hospital Formulæ

Glucose	2 ounces;
Eggs (whites)	2;

Salt solution to make the desired amount.

Eggs	3;
Solution of dextrose (20 per cent.)	5 ounces;
Starch solution	1 ounce.

Egg	1;
Peptonized milk	3 ounces;
Brandy	½ ounce;
Table salt	¼ teaspoonful.

Eggs (whites)	2;
Peptonized milk	2 ounces;
Liquid peptonoids	1 tablespoonful.

Milk	3 ounces;
Liquid peptone	2 tablespoonfuls;
Egg (yolk)	1;
Laudanum	5 drops;
Soda bicarbonate (if the peptone is acid)	5 grains.

"The addition of salt to all forms of food enemata aids in their absorption."—*Thompson.*

CATHARTIC ENEMATA

Flaxseed Enema

Flaxseed	2 tablespoonfuls;
Cold water	1 pint.

Boil for ten minutes. Strain out the seeds and inject while warm (not hot).

Cotton-seed Oil Enema

Cotton-seed or olive oil	1 ounce;
Soap and water to make	1 pint.

Glycerin and Epsom Salts Enema

Glycerin	2 ounces;
Epsom salt	2 ounces;
Turpentine	2 drams;
Sterile water	4 ounces.

The turpentine is often omitted.

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